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OF THE

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

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# MEDICAL AND PHYSICAL SOCIETY

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# CONTENTS.


ART. I. — A short sketch of the Medical Topography of the Fortress of Bukkur and the Cantonment of Sukkur in Upper Scinde, and of the diseases, which prevailed in the Brigade there, from the month of March to that of December 1839. By J. Don, M. D., Staff Surgeon ..... 1

— II. — Notes on the Medical Topography of Tatta on the river Indus, with a short notice of the diseases which prevailed in the 22d Regiment N. I., when stationed at Tatta, or in progress up the river Indus in boats, during the months of August, September and October 1839. By J. Inglis, M. D. ..... ... 29

— III. — Annual Report of the Native General Hospital at Bombay, for the year 1838 ..... 38

— IV. — Catalogue of Articles of the Materia Medica of Europe and India, found at Aurungabad and in its vicinity. By A. Walker, M. D., ..... ..... 50

— V. — Annual Report, for 1839, of the 1st Regiment, Bombay European Infantry, stationed at Aden. By J. Howison, Esq.... 79

— VI. — Report on the Cases of Aden ulcers received in the Marine Battalion Hospital, Bombay 1839. By A. Campbell, M. D.. 84

— VII. — Practical observations on the pathology and treatment of Tropical Dysentery. By James Bird, Esquire ..... 90

— VIII. — Annual Report of the Native General Hospital at Bombay, for the year 1839 ..... 106

— IX. — Annual Report of the Diseases, in the Jail and Detachment Hospitals at Rutnagherry in the Southern Concan, from the 1st January, to the 31st December, 1839. By John Bourchier, M. D ..... 117

— X. — Medical History of H. M. 2d or Queen's Royal Regiment, from the 1st of April 1838, to the 31st of March 1839. By R. H. Hunter, Esq. ..... 131

— XI. — Medical History of H. M. 2d or Queen's Royal Regiment, from the 1st of April, 1839, to the 31st March, 1840, — during the Campaign in Affghanistan. By R. H. Hunter, Esq. ..... 146

ART. XII. — A Synopsis of ten years' Meteorological observations on the Mahabuleshwur hills. Lat. 17° 56′ N. Long. 73° 30′ E. Heighth above the Sea 4500 feet. Table I. Shewing the Means and Extremes of Temperature &c., for each Month (1828 — 1838) ..... 1

Table II. Shewing the Means and Extremes of Temperature, &c., for each Season (1828 — 1838.) ..... 1

Summary of Mean and Extreme decennial results. ..... 1

---

## APPENDIX.

1. — Abstract of the annual reports, for the years 1838 and 1839, of the field detachments stationed at Balmeer, by the late Assistant Surgeon, S. P. Prichard.....

2. — Meteorological Observations, chiefly on Solar radiation, made at Mhow, by A. Weatherhead, Esq., M. D.....

3. — Notes on the Scurvy, as it has appeared at various times, in the Jail at Rutnagherry, by J. Bourchier, M. D.....

4. — Description of the operation of Lithotomy as performed by a native Surgeon in the presence of A. Gibson, Esq. Communicated by that Gentleman in a letter addressed to the Secretary to the Society.....

5. — A short notice of the station of Karrachee in Lower Scinde by F. S. Cahill, M. D. in a letter addressed to the Superintending Surgeon.....

6. — Notes on the climate of Panchgunnee situated on the Eastern side of the Table land of the Mahabuleshwur Hills.....

7. — An account of a Disease, which affects the Camels in the Province of Lus; called Photo Shootur, by the natives, and supposed by them, to have properties analogous to those of the Variolæ Vaccinæ — Extracted from Dr. Winchester's report on the Topography of Tatta. .....

8. — Case of dislocation of the lower Jaw caused by the act of vomiting. Communicated by W. Mackie, Esq.....

9. — Note on the catalogue of articles of the Materia Medica by A. Walker, M. D.. .....

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Quarterly Proceedings of the Medical and Physical Society of Bombay,
List of Donations for the Library .....
List of Members of the Medical and Physical Society of Bombay .....

# TRANSACTIONS.

1840.

# TRANSACTIONS

OF THE

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

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## Article I.

### *A short sketch of the Medical Topography of the Fortress of Bukkur and the Cantonment of Sukkur in Upper Scinde, and of the diseases which prevailed in the Brigade there from the month of March to that of December* 1839. By J. Don, M. D., Staff Surgeon.

Presented by the Medical Board, January, 1840.

The fortress of Bukkur and the neighbouring cantonment of Sukkur are situated in latitude 27° 42′ North and in longitude 68° 96′ East, and are separated from each other by one half of the stream of the Indus; the other half runs between the fort and town of Roree, which with the camp and fort, occupies the crown of a range of limestone hills, narrow at this part, but widening as it extends on either side.

This range stretches in a south-westerly direction to the right of Jeysulmere for upwards of a hundred miles, but only for about two miles to the north-west, where the rock sinks under the low alluvial plain which extends towards Shikarpoor, and beyond that place to the Hala range of mountains. The flat plain through which the river Indus winds its way to the ocean, extends in a northerly and southerly direction.

The fort and cantonment are nearly on a level, and the highest building is about one hundred and thirty feet above the river, and about six hundred feet above the level of the sea. The fort of an irregular oval figure is about eight hundred yards in length,

and four hundred in breadth; its walls are washed on three sides by the river during the inundation, but to the north-eastward, a small tongue of alluvial deposit on the rock, projects out, is inclosed by an outwork and sprinkled with date palm, ceriss, and peepul trees; some of the last of which are seen on the walls and outworks in other parts of the fort. The surface of the interior of the fortress is very irregular, and is covered in all directions with the rubbish and debris of houses, mosques, and probably military buildings. There is one large mosque which, in its day, must have been a place of no small pretension to grandeur, but it is now mostly in ruins, and no part of it fit for the sacred uses of the Mussulman. There are several venerable shady trees in various parts of the fort, chiefly tamarind, peepul, and ceriss (mimosa cerissa.)

There are few habitable houses in the bazar, and these not in the best repair; when it was taken possession of by the troops, only one good public building of any size (the late residence of the Killadar) was found on the eastern wall. The walls of the fort are in bad repair as the houses they contain; many parts are tumbling into decay, and little pains seem to have been taken, to maintain their preservation. It bears the appearance of great antiquity, and is supposed to be the "Munsoora" of the ancients. But the town of Alore, about four miles to the eastward, is a place of still greater name and age, it was at one time the metropolis of a mighty empire which extended from Cashmere to the ocean, and from Candahar to Kanoje but is "now a humble hamlet with some ruined tombs."*

*Cantonment of Sukkur.* The cantonment for a brigade of two regiments, on the Sukkur side, is on an inclined plain, a sort of table land, to the north-west of the fort, and about three quarters of a mile distant. The sepoys' lines front to the north, and the officers are located on the eminences to the southward and westward. Though the space is rather small, no other in the neighbourhood combining the advantages of elevation and proximity to water, could have been found for the same number of troops.

The little cones and eminences round camp are covered with tombs and mausolea, many of them of ancient date, and all falling fast into decay.

The hospitals are to be built on an eminence to the north-westward of the lines, and one has been erected there for the Europeans, on a very airy spot well elevated above the surrounding country.

* Burnes.

The river about a mile above the town of Sukkur, and two from camp suddenly turns to the south-eastward, then sweeping round it passes the fort and Roree, gradually turns to the westward and forms a sort of peninsula including the town of Sukkur, the cantonment, and the neighbouring heights. To the westward of camp, there is a strip of alluvium covered with date palms, gradually widening as the river descends, and becoming a considerable grove interspersed with gardens and cultivation irrigated from the river.

The neck or isthmus of the peninsula may be about three or four miles broad, and it is somewhat singular, that the river has never made a breach across, instead of continuing its almost horse-shoe course through the rocky channel between Sukkur and Roree. One small canal, or more properly speaking, water channel, has been cut across for about a mile and a half above the town of Sukkur for the purpose of irrigation, but it is shallow, only filled during the inundation, and is dried up early in September.

*Surrounding country, canals, &c.* Towards Shikarpoor and about four miles from camp, the country begins to be intersected by water courses and continues so, as far as that town. To the northward of Sukkur, along the banks of the river, these canals and channels are also very numerous. To the southward the country is less broken, the banks are higher, and there is more pasturage and jungle but less cultivation, except on the very verge of the river.

The Scinde canal which opens from the Indus about twenty miles north-east of camp, passes within a mile and a half from Shikarpoor, and extends navigation for several miles, in boats of considerable size, for three or four months in the year; it carries the means of irrigation for the surrounding country during the inundation and finally joins the Nara branch of the river beyond Larkhana. About forty miles beyond Shikarpoor, commences what is called in the maps, the "marshy desert", which extends in breadth about thirty or forty miles, and in length about a hundred and fifty from the Hala range of hills to the bank of the Indus.

I have already mentioned, that the range of hills on which the fortress and camp are placed, is of limestone. It lies in regular strata and in distinct boulders, in some parts has an appearance of having been artificially arranged and is plentifully interspersed with irregular pieces of flint. Unlike that of Lukkee, which abounds in several species of testacea in beautiful preservation, I have found in it no fossil remains.

*Soil.* The soil in the plain of the Indus in upper Scinde, is a

mixture of clay, micaceous sand, and carbonate of lime; the latter predominates so much at times, as to assume a marly appearance. It contains less vegetable matter than the alluvia of the Delta for obvious reasons; but it is nevertheless, rich; cultivation is extensive and productive, and might by a thicker and more industrious population be rendered infinitely more so.

*Produce.* Opium, indigo, and tobacco are cultivated but not so extensively as towards Sehwan, and an inferior kind of cotton is grown on the banks of the river, of course by irrigation. Sugar-cane is also common, but it appears, at least in the neighbourhood of Sukkur to be of inferior kind to that of Guzerat and Bassein.

The grains in common cultivation are jowarree, wheat, barley, badjiree and these as to quantity, in the succession mentioned. They are all good of their kind, more especially the two former. The different kinds of vetches are also grown, but less extensively than farther down the river, where large fields of them are very common. The oil plants too, are grown as in all eastern countries.

The gardens along both banks of the river, produce pomegranates, peaches, apricots, and a small species of apple, the three last, and indeed all, of very indifferent quality. Grapes are also grown in season, but of a very indifferent description, and the limes which are common and small are dry, and wanting in flavour. All this inferiority in horticultural produce, is as much owing to want of skill in cultivation, as to climate; and many of the fruits I have mentioned, will no doubt assume a different appearance under the guidance of amateur gardeners, if this long remain a British cantonment.

The country is also miserably deficient in esculent vegetables, and this ought not to be the case, where soil and easy irrigation, afford the means of growing almost every thing common in India; instead of which the whole catalogue consists of cucumbers in season, turnips, tolerably good onions, carrots of a very inferior tasteless kind, brinjals, the toorie, and doodie of India, and one or two bad kinds of badjee. The introduction of potatoes would be a great blessing to the country, and I think there is little doubt of their being readily grown.

*Jungle trees.* The productions of the jungle or uncultivated part of the country in the neighbourhood of camp, are chiefly tamarisk which extends far and wide, especially to the north and westward; the different species of mimosa (babul most abundant)

And the jowassee or camel-thorn, are every where met with. In the immediate neighbourhood of Sukkur, and on the opposite bank of the river, the date palm is the predominant tree, forming groves on either side, interspersed with the gardens before mentioned, and with patches of cultivation. A few bher and mango trees are here and there interspersed, as well as neem, tamarind, and the mimosa cerissa, which here as elsewhere, is a beautiful, shady tree, though of more stunted growth than in India. Peepuls, I have mentioned, are met with chiefly about the fort and the towns of Sukkur and Roree. The talee tree of which the boats of the counry are built, is a common tree in the jungles of upper Scinde.

*Inundation.* The inundation, on which so much depends both in a beneficial and a noxious point of view, becomes an important feature in the medical topography of this country. It commences about the vernal and begins to subside a little before the autumnal equinox. For the last two years it has commenced in force, exactly on the former day; and this year, rising in one night to a considerable height, it carried away the remains of a bridge of boats thrown over the river for the passage of the Army of the Indus. After a few days it again subsided considerably and continued to rise and fall till it attained its greatest height in July and August; in the first week of September it began to fall, and to lay bare the flat country previously flooded during the highest inundation. It was very irregular in its risings and falls, often varying several feet in one day and at different periods of the same day.

A very considerable rising was observed in the river corresponding to the full and new moon, during the first three months of the inundation; depending on some lunar influence which caused greater heat, and greater melting of snow at these periods, at the sources of the river.

In the immediate neighbourhood of the cantonment, there is little of the country overflown at any period of the inundation, but a few miles to the northward, it is completely flooded after the first high rise of the river, and the roads continue for months impracticable except for foot passengers. To the south-east and thence to the south-west, ranges the hill I have described, and from Sukkur downwards, the banks of the river are higher, and the country is not so overflown.

The low country between this and Shikarpoor, and all around that town is described as a perfect swamp; while the Scinde canal

formerly mentioned, running near it pours out its water of irrigation and adds to the causes that must render it always an unhealthy place during these months of the year.

The extent of rise of the river during the last inundation, or the difference between the highest flood, as marked on the walls of the Fort and the lowest fall, was fifteen feet eight inches; and this was reckoned an average inundation.

*Water of the Indus.* The water of the Indus is densely muddy throughout the year, but of course more so during the inundation. The silt when deposited is found to contain silex, alumen, carbonate of lime, and a little vegetable matter, in fact corresponding to the soil on its banks. These vary in proportion at different parts of its course, the silex and carbonate of lime being in greater quantity here than towards the Delta. The vegetable matter in the monsoon is considerable, and the water soon putrifies if left unchanged, emitting a disagreeable odour, and tasting of decomposition. When purified in the usual way, by setting it aside for a day, and then throwing in a few grains of alum to the gallon of water, it becomes clear as possible and is delicious; reminding one of what is said of the sweetness of the waters of the Nile. The natives dislike all purification with alum, and think it unwholesome, but the quantity used is so small, and the greater part of that being decomposed, and thrown down in sediment, it cannot be prejudicial to health, while it certainly improves greatly the quality of the water.

* The quantity of silt I ascertained early in September near the highest rise and most muddy period, in a quart of water to be fifty-one grains and in October at nearly the lowest fall of the river twenty-one and a half grains in the same quantity.

*Climate.* The seasons are divided here into hot and cold, each lasting half the year and rapidly merging into one another, without any intermediate spring or autumn. March is reckoned the first of the hot months, and October the first of the cold; but in the end of February the temperature rises very high in the middle of the day, as it does throughout the month of October. The nights of both months are however cool. The greatest maximum is in June† (the

* At Hydrabad Lieut. Wood of the Indian Navy ascertained the maximum during the inundation to be fifty-seven grains and the lowest he noticed in September was thirty-one grains in the same quantity.

† The Hospital was removed from tents into a building on the 23d of May.

Maxima of April and May in the following table, were taken in tents) and in that month the nights are excessively hot from the prevalent winds blowing over the sandy desert towards Jeysulmere; the thermometer frequently remains throughout the night as high as 96° and only falls a little towards morning.

The prevailing winds during the hot months will be seen from the following table, to be from the southward and westward. Both these and the range of the temperature will be best understood by this abstract.

| Months. | Thermometer. | | | | Rains. | Prevalent Winds. |
|---|---|---|---|---|---|---|
| | Minimum during the year. | Maximum during the year. | Mean of daily Minima. | Mean of daily Maxima. | | |
| March | 60 | 104 | 72 | 95* | Showers on the 14th & 15th | Southerly. |
| April | 61 | 110 | 73 | 103 | ——— " ——— | Southerly and Easterly. |
| May | 76 | 110 | 81½ | 103 | ——— " ——— | Ditto. |
| June | 85 | 109½ | 88 | 104 | ——— " ——— | Southerly. |
| July | 82 | 104 | 86 | 93 | Showers on the 15th and 16th heavy rains on the 17th clear on the 18th slight showers again, on the 25th and 27th. | S. Westerly. |
| August | 82 | 102 | 85 | 97 | Slight showers on the 12th | S. Westerly. |
| September | 77 | 100 | 82 | 94 | Slight showers on the 14th | S. Westerly. |
| October | 69½ | 96 | 74 | 89 | ——— " ——— | After the 8 Easterly and N. Easterly. |
| November | 61½ | 87 | 65 | 80 | ——— " ——— | E. and N. Easterly. |

* This Registered during the last 10 days of March.

Periodical rains, it is well known, never visit Scinde, and the occasional falls with which it is sometimes blessed are few and far between. More rain has fallen this, than in five previous years, yet the whole did not amount to five inches; having no pluviometer I state this by guess, it was however certainly not more. Cultivation is solely dependent on the inundation of the river and if a good fall of rain opportunely happens, it is proverbially said "to rain gold" to the cultivator.

The average heat throughout the season is I believe higher than in any part of India; and there being no periodical rains to reduce the temperature, the continued heat for half the year must be a powerful agent in the production of disease, not only immediately, but also mediately by producing debility and rendering the body more susceptible of the influence of malaria at the end of the hot season. This will of course act more on the unacclimated; and the natives

accustomed to the heat from their infancy, bear it in a most incredible manner.

Upper Scinde is at times visited by severe squalls or more properly speaking whirlwinds during the early part of the hot season, which are truly terrific in their first appearance, though comparatively harmless. They are extremely partial, and extend only for a mile or two in breadth, but apparently sweep for a long distance in a curvilinear direction.

This station was visited by one on the 20th April, about four in the afternoon. Our attention was first attracted by a loud rushing noise like that of an immense cataract, which was immediately followed by darkness and the appearance of a dense cloud approaching us from the south-eastward, rolling in large volumes, and involving the town of Roree, as it were, in utter annihilation. It swept across the river with giant strength, and in one moment almost every tent in our camp was levelled with the ground, and many date trees torn up by the roots. The placid river was lashed into a mimic sea, and the spray was driven to an incredible distance. The dense cloud of dust carried along with the whirlwind, left us in darkness, and objects could scarcely be distinguished by the lurid un-earthly light caused by the sun's rays passing through the dense cloud of sandy dust. It gradually subsided after the first burst, the wind veered from south-east all round the compass, it was all over in about fifteen minutes, and every thing was left covered with dust. It was so partial that a native in a boat about three miles above Sukkur saw the cloud pass over Roree, but felt none of it.

This storm appears to have been of that kind experienced by the army of the Emperor Julian near the Euphrates and like that which sunk the Tigris Steamer in the same river in 1837 with such melancholy loss of life.

*Population.* The population of upper Scinde generally speaking, is composed of three distinct classes viz. the Scindees, or original Mussulman inhabitants of the country, the Beloochees at different times settled here, and two or three casts of Hindoos chiefly Banians who have been in the country from time immemorial, and are probably the aborigines.

It is not my purpose to describe these different classes further than as regards their health, and the agents that affect it, I shall only therefore briefly mention their different occupations and general modes of life.

The first class comprises the cultivators of the soil, the boatmen on the river, the artisans, and generally speaking all those employed in the more laborious occupations of life. They live on animal and vegetable food, the former in proportion to their ability to procure it, but as it is expensive, fish is more commonly used; this in certain seasons is plentiful and though not high priced, is yet beyond the means of many. Jowarree bread forms the chief article of food among the lower classes, sometimes simply pounded and baked into cakes, and sometimes with a little ghee and condiment; but the former is by much the more common mode, even amongst the most laborious class, the boatmen.

The practice of drinking Bang, an infusion of Ganja leaves (the Cannabis sativa) is very general after a meal of Jowarree bread, and is indeed universal amongst the boatmen who seldom show after its use the slightest appearance of intoxication. It seems to have the same exciting effect as the tobacco hooka which generally follows a draught of this nauseous looking beverage. Notwithstanding this poor food, they are a fine looking, well developed race of men, particularly some of the boatmen whose means and manner of life afford them a little better diet. This class of men labour under the primitive curse of earning their bread &c. in unusual severity; for days they are exposed in tracking their boats, frequently up to the middle in water, with the burning sun over their heads, while the utmost muscular exertion is required to gain way against the current, and often against the wind. Exposure in the cold weather, is not more easily borne, for their occupation in the water at a very reduced temperature, and the cold northerly wind must be a vicissitude not very conducive to health nor very comfortable to their feelings. Their clothing is little calculated to defend them from the heat or cold which are always in extremes. A light Scinde cap for the head, an angreka of cotton cloth, and trowsers of the same material, sometimes a cummerbund, to which is added a cumblie, for the winter months, complete their dress.

The Beloochees settled in Scinde are either employed in the military or police of the country, or cultivate land which has been obtained for such services. They are in general well clothed, are physically a fine race of men, often live beyond the extreme period allotted to man "three score and ten" and are frequently, in such cases, fine specimens of patriarchal old men. On the contrary those who indulge in the immoralities but too frequent in the country, and are addicted to opium, soon give way to the effects of both, and become prematurely old and broken down.

The Hindoos are chiefly employed in trade, in shopping or hawking articles of food or clothing, and the poorer classes are muzoories or day labourers. The richer class who can afford good food and clothing, and who are well housed, are a good looking race; but the poorer classes are miserable in appearance, pale, sickly, and often showing signs of the full operation of malaria, on an ill fed, ill clothed people. They are not so particular about the nature of their food as their brethren of India, but poverty confines them to the cheapest and the worst.

*Diseases among the Natives.* The diseases most common among the natives, as might be expected, are fevers and rheumatism; the former occurring at all seasons but chiefly after the subsidence of the inundation of the Indus; the form is mostly intermittent, hence structural enlargements of the spleen are frequently seen amongst them. These fevers are not considered by the natives as dangerous, and seldom prove fatal unless by inducing enlarged spleen and consequent dropsy or lientery. Remittent fever also prevails in the months of September and October, and in some seasons proves very fatal.

Pulmonic affections in the cold season are very common. Phthisis as far as I have observed, is not a common disease. Dysentery in the early part of the hot season is of frequent occurrence as also other kinds of milder bowel complaint; the latter no doubt owing to, or assisted by the quantities of cucumbers eaten by all classes from the prevailing belief in their cooling qualities, as an article of diet

I observed a number of cases of Cynanche Parotidæa among the natives in the early part of the hot season, and many of them applied to me suffering from the disease. It was generally mild, and readily yielded to the usual treatment.

The Chronic Rheumatic complaints so frequently met with, are often complicated with symptoms of secondary syphilis, a disease very common throughout Scinde, owing to the low state of morals among all classes, and perhaps rendered more virulent as well as disseminated more widely by the filthy habits of the people.

The epidemic diseases which I have noted, as commonly occurring are small pox, measles, influenza, and cholera; the first and last have prevailed during my residence in the country, and both in a severe degree. It was impossible to ascertain any correct proportion of deaths from either, but during the prevalence of the latter I was enabled to mitigate the severity of the disease by freely dispensing medicine among all classes in the neighbourhood.

I endeavoured also to introduce vaccination during the prevalence of variola, but without success. We had newly arrived in the country and were strangers to the people, who had not that confidence in us, which they begin now to have and which will soon overcome all obstacle to the introduction of so great a blessing.

I have not observed that great prevalence of diseases of the eye about Sukkur which Dr. Lord mentions as occurring in Khyrpoor; this class of diseases must be more rare in upper than in lower Scinde, as the dust driven about by the wind is very trifling in the former; while in the latter it is almost always blown about in clouds and proves a very common exciting cause.

Diseases of the skin are not so common as might be expected from their filthy houses, clothing and fish diet; I have only met with two cases of Lepra and in these, the attack first commenced in Khorasan.

It may not be out of place here to mentions that there is a species of venomous snake in Scinde, the bite of which is followed by a very fatal train of symptoms. I have not been able to see one, but from its description by the natives, I should suppose it to be the same species of black snake as that found at Balmeer and described by Mr. Forbes in a paper in the second volume of the Transactions of the Bombay Medical and Physical Society. The bite is followed by great nervous depression, deliquium, and sopor; after recovery from which, the patient is affected by passive hæmorrhage from various surfaces and a fever of the typhoid kind.

I have only seen two cases of the bite, one was brought to me about an our after the infliction, and Liquor Ammoniæ was liberally administered till he recovered from the collapse, after which opium and camphor, and latterly tonics completed the cure. This patient passed a considerable quantity of blood by vomiting. The other a child of five years old was brought to me in the state of passive hæmorrhagy and fever, I prescribed, after an aperient, calomel, opium, and camphor; but as he was not brought back, I am ignorant of the result.

The state of medicine and surgery in upper Scinde is at a very low ebb; the lower classes are obliged to trust to any popular remedy, many of which can be had in every Banian's shop. The higher classes have their hakeems and tubeebs, men such as are met all over India, strict followers of the hot and cold system of medicine and diet. Their materia medica appears to be exactly that of the same class of people in India, and their knowledge of disease and success in its treatment are much on a par.

*Health of the European Troops.* I now come to notice the health of the troops during our residence here and first of the Europeans; but before entering on this subject, it will be necessary briefly to advert to the material of which the detachments were composed, not only to account for the great mortality they experienced, but also to appreciate the effects of climate and exposure on men such as they were. Those composing the details of H. M. Regiments were all either suffering from chronic disease or were so reduced by previous illness as to be unable to proceed with the army; the men of the H. C. Artillery were either sick and convalescent, old or broken down soldiers, or young recruits just arrived in the country. Such men, under the most favorable circumstances, could scarcely be expected either rapidly to recover health, or resist any deleterious influence of climate, and being as they mostly were, of very intemperate habits, these might be expected to act in full force, when indulged in without the possibility of check or control.

On arrival at Sukkur, the tents of the men, for the purpose of shade, were pitched in an open date grove, which afforded every opportunity of introducing the spirit of the country, a most poisonous liquor prepared from dates, sugar and bang. Every exertion was made to stop the sale of this noxious stuff by the officers commanding—but evidently without effect, for constant cases of drunkenness were occurring, and so hardened were the men in their intemperance, that punishment and its example had little effect upon them. As the season advanced and the heat became more intense, cases of illness in consequence of these indulgences, became more common in the shape of fevers, bowel complaints, and one case of delirium tremens. Unfortunately the Engineer, from the scarcity of workmen, was unable to erect barracks; and the men remained in tents till the middle of June, with the thermometer often at 115° at its maximum.

These circumstances of exposure and intemperance in men previously reduced by ill health, added to an occurrence in the course of military duty which I shall presently mention, led to the production of a most fatal train of disease, which I shall now proceed to describe.

In the early part of May, two young men died, one of insolation and the other from remittent fever ending in apoplexy, both traceable to excess and exposure. After this, no case occurred deserving of notice till the beginning of June when it was deemed expedient by the authorities here to send a force against a Beloochee fortress, about 60 miles to the northward of Shikarpoor; a detachment

of artillery under Lieutenant J——, and of Her Majesty's Regiments under Lieutenant C——, in all about forty-five men, were ordered to march on that place on the 2nd of the month. The excitement of this approaching service caused additional intemperance, for some days previous to the march; and on the 2nd the disease broke out in its most fatal form.

On this day, three men were admitted into hospital who died apoplectic after a few hours illness.

On the 3rd. six men admitted, one of whom died in convulsions in the afternoon.

On the 4th. two admitted, one of whom died three days after with cerebral oppression.

On the 5th. six were admitted, one of whom died apoplectic in the afternoon.

On the 6th. five were admitted, one of whom died apoplectic shortly after admission.

After this date, three men were admited all of whom recovered.

The detachment for field service marched at 3 o'clock on the morning of the third, intending to reach their ground about ten miles off, as soon after sun-rise as possible. Most unfortunately Lieutenant C and his detachment fell behind on the road, missed the guide and lost their way. After wandering all night and till noon the next day — they lay down quite exhausted under the shade of some trees. Several men were taken ill and two died before four o'clock, when Mr. C. having been found by men sent out by Lieut. J. was brought to his encampment with his detachment and other two men at the point of death, who soon afterwards expired. Lieut. C. was taken ill himself; and though actively treated, died in convulsions next day—after feeling and expressing himself much better for some hours.

Many of Lieut. J's men had also lost their way and got to their encampment after noon. Two died apoplectic and one was missing and never afterwards found.

Of a detachment of Golundauze fourteen strong, one man was missing and not afterwards heard of, no other was taken ill nor were any of the twenty-four dooly bearers, though much exposed and much worked during three days.

A detachment of the 5th Regiment Native infantry one hundred and fifty strong, following two days afterwards lost two men from apoplexy.

The disease as it presented itself to me, showed either a state of complete apoplexy or of cerebral fever marked by the following symp-

toms. Strong quick pulse, intolerance of light and contracted pupils tumultuous action of the heart, heat of body extreme, as also the extremities; skin arid, and burning to the touch, conveying a sensation never to be forgotten; frequently nausea or vomiting; tongue generally foul; bowels sometimes loose for some days before at other times naturally open; urine high coloured and scanty.

The mental faculties were always clouded, with drowsiness and inclination to constant sleep, the patient only being aroused when shaken or spoken to loudly.

These symptoms, if not boldly combated, ended in apoplexy, and sometimes, notwithstanding active treatment they were followed by this fatal state from which none recovered; nor indeed did any treatment after this appear to have the slightest effect.

Dissection showed invariably more or less congestion in the brain and its meninges; but the degrees were various according to the habit of body and violence of the attack.

In those who died suddenly and where depletion from the state of the circulation could not be effected; in short, in those moribund when brought to hospital, the congestion was always greatest; and in these, was found not only injection of the meningeal vessels, but also of the substance of the brain itself, shown by numerous bleeding points on cutting into it, chiefly in the centrum ovale. In almost all, there was effusion of serum in the ventricles from two to three drachms; and in one, trifling effusion between the dura mater and tunica arachnoidea.

Next to the head the stomach showed most frequently marks of disease, and the lesion consisted almost invariably of spots on the mucous surface, chiefly towards the cardiac extremity, varying in size and of a purple dark colour. In one case it nearly occupied the circumference; in another it was not larger than a shilling. This purple colour was caused by injection of the mucous membrane which was somewhat thickened wherever this appearance showed itself. In only one case did there appear any congestion of the vessels of the external surface of the stomach.

The small intestines of those who had previously had loose bowels, showed some disease; and the mucous coat was slightly suffused in patches, but generally neither jejunum nor ileum showed any appreciable lesion.

In no case was there any remarkable congestion of the liver or spleen.

The exciting cause of this fatal disease was no doubt exposure to the sun and to high temperature. That heat and atmospherical in-

fluence without exposure, will cause the disease, there can be no doubt, as was proved in two fatal cases in June and July; one man Serjeant F. employed as a writer in the Post Office, and in no way exposed to the direct rays of the sun, and another Corporal S. confined to his cot in hospital by a broken leg; both died apoplectic after a few hours illness.

The great predisposing cause were doubtless the habits of the men; as is proved by its having almost entirely been confined to the European soldiers. No officer and only three sepoys of the Native regiments having been attacked in cantonment.* Another predisposing cause was the weakly state of many of the men reduced by previous disease, almost all having been lately treated in hospital for various ailments.

The treatment pursued was first to relieve the circulation and oppressed brain by copious bleeding from the arm and temporal artery; but this remedy, though so plainly indicated, was not always followed by relief; and after the slightest apoplectic appearance, never. If had recourse to early, it generally relieved all the symptoms; and when followed by topical bleeding the relief was greater and more permanent, unfortunately, however, leeches were very scarce and not procurable at any price; and this was the more to be lamented, for in those cases in which they were used the benefit was evident. Cupping was not so beneficial; cold lotions and the "douche" to the shaved head, were invariably used and were undoubtedly useful. Blisters to the neck and head, sinapisms to the epigastrium and the pediluvium completed the list of local remedies.

Strong cathartics of calomel and colocynth followed by saline medicines and infusion of senna, were invariably administered, but in bad cases the termination was fatal before any operation could take place. Enemata were in many cases useful. When the head and bowels were relieved, diaphoretics of antimonials with the liquor ammon, acet, were sometimes useful in relaxing the skin. After the subsidence of the febrile symptoms, tonics, quinine, &c. were administered and generally convalescence was rapid.*

* Although the native troops suffered little from the formidable cerebral disease that proved so fatal to the Europeans at Sukkur, yet the sufferings of an escort which left our camp on the 18th of May with a Cafila of 4500 camels with treasure and supplies for the army in Affghanistan proved, that they were liable to it under circumstances of fatigue and exposure, to a most fatal degree.

'I have little to notice concerning the cholera, which made its appearance in the hospital on the 8th of June, and proved fatal to three men, two of whom got over the collapse, but died after reaction took place, from cerebral symptoms. They were all much reduced by previous disease, two were convalescent from remittent fever.

This escort consisted of a wing of the 23d Regiment, Bombay N. I., about 300 strong, and was joined at Shikarpore by a wing or detachment of a Bengal Regiment of N. I. of about equal strength. Thirteen Europeans accompanied it, viz. eight officers with the detachments including one Assistant Surgeon, two officers proceeding to join the army in advance, two conductors and an European agent with supplies from shops at Sukkur.

The marches were always made at night, and for the most part the escort got to their ground before the morning sun was very powerful; excepting the rear guard which was frequently out till late in the morning. The sepoys off duty were sheltered during the day in rowties and the pals of Bengal. Most of the officers were in good tents; and the conductor and agent in rowties. Supplies were plentiful, but the water was bad particularly at Rajhan. The duties of both officers and men were most harassing from the frequent attacks and threatenings of Beloochee robbers; and the heat was excessive during the day, nor did it fall to any thing like coolness till towards morning.

Soon after leaving Shikarpore sickness began to show itself amongst men and officers; and after the exposure and fatigue of the march across the desert, deaths became numerous; as the escort advanced these increased; and before arrival at Dadur, twelve men of the 23d Regiment, and thirty of the Bengal Regiment had fallen victims to apoplexy, insolation and fever, but the mortality amongst the Europeans was most fearful, viz., two officers, one Assistant Surgeon, both Conductors, and the European agent. Two more officers were most dangerously ill and were only saved by a timely arrival at Peagh where the shelter of a house was obtained for them. Major N. who furnished me with the substance of this note, attributes the greater exemption from mortality of the 23d Regiment to their being supplied, as is the custom of the Bombay army, with canteens of water with which they refreshed themselves on the march, as well as at all times on duty when water could not otherwise have been readily procured.

During this disastrous march the camels suffered even more than the escort; and of 4500 that started from Shikarpore, only 1017 were found by a Committee at Dadur, fit to proceed to Candahar. This is a fearful lesson to deter such another undertaking at that season; and shows in a strong light, the deadly effects of heat during those months of the year.

Major N. mentions that nearly half the detachment of the 23d suffered from ulcers in various degrees, (the ecthyma subsequently alluded to) during their residence at Dadur. These if irritated became troublesome sores; but if left to themselves or treated mildly soon healed without inconvenience.

The other diseases that prevailed at Dadur, were the same as those we experienced at Sukkur, but cases of fever were much more numerous and the visitation of cholera in June was much more fatal.

The most remarkable feature in the cholera as it prevailed in Scinde, was its regular march, stage by stage from Kurachee where it appeared first and proved very fatal to the troops. It was equally fatal in its nature in the towns and villages around us; and Khyrpoor was almost deserted for some time in consequence of the mortality causing a panic amongst the natives. Fortunately it was not very fatal in camp, and passed us over comparatively lightly; neither was it very fatal in the towns of Sukkur or Roree.

In the return for May, there appears one casualty from intermittent fever; the immediate cause of death was a spontaneous rupture of the intestine into the cavity of the abdomen. The man an old unhealthy subject, having previously suffered from fever and dysentery during a residence of thirteen years in India, was admitted with tertian of which he had two paroxysms, and was apparently recovering under the use of sulphate of quinine, his bowels had been rather irregular while in hospital, but not particularly so, and he never complained of abdominal pain. He was suddenly seized with excruciating pain in the hypogastric region, with cold clammy perspiration, weak, almost imperceptible pulse and efforts to vomit; he sank very rapidly and died on the second day. I thought it probable from the man's appearance and former diseases, and the absence of all previous abdominal symptoms, that we should find on dissection an abscess of the liver burst; but this organ was healthy and two small openings were found in the ileum, through which the contents of the intestine had escaped into the cavity of the abdomen.

Dysentery during the early part of our residence here was a common disease, but it was imported with us, for the most part, and I believe only two of the fatal cases were first attacks, and those in men worn down by previous disease. Of the chronic cases some recovered after long illness, but most of those who arrived here very ill, died; nor was this surprising, for no climate could be less adapted for recovery from dysentery than this in the hot months; and indeed it is one of the diseases of that period among the natives of the country.

I have nothing to remark on the treatment of dysentery, as it occurred amongst us, except the entire failure of the ipecacuanha and gentian plan, both in the first attacks and chronic cases, after a careful trial. Not so in the dysenteries and bowel complaints of the native troops in which it proved eminently successful; but of this more afterwards. Nor did mercury after depletion carried to ptyalism always prove successful, one man having died after this was effected; the death occurred after it had run on into a chronic state.

Of hepatitis we had but few cases and none that was not a second attack; one proved fatal from the bursting of an enormous abscess. This patient was received into the hospital boats once or twice on the march up, with symptoms of chronic dysentery from which he apparently recovered, but no doubt, then, the liver was implicated. He was attacked afterwards with symptoms of acute hepatitis, and died of abscess after two months illness, having rallied once or twice in the meantime. The only remarkable symptom in this case, was the very slow and weak pulse, seldom rising above 65, even after unequivocal symptoms of suppuration had taken place. This weak slow pulse continued throughout, till a short time before the patient's death.

Several cases of chronic rheumatism complicated and uncomplicated appear in the returns during the early months of our residence; many of these were either cured or very much relieved by the hydriodate of potass, which I have here as well as elsewhere found an invaluable remedy in such cases. It was particularly useful in those attended with periosteal swellings, where a syphilitic taint in some instances may have existed, or where much mercury had been previously used either in the cure of that or other diseases.

*Miasmatic Fever.* After the first partial subsidence of the inundation in August, remittent and intermittent fevers began to show themselves, the former in greater proportion. Towards the latter end of the month, several cases occurred with cephalic symptoms that required free depletion both general and local; these means with purging by calomel and colocynth, generally brought about a remission, after which the case yielded readily to the usual treatment.

In September intermittent fever prevailed in far greater proportion, and the treatment became more simple. An emetic on admission, followed by a full dose of calomel, colocynth, and tart. antimon with occasionally leeches to the temples during the hot stage, and afterwards quinine liberally administered during the intervals of fever, in all cases soon effected a cure.

One patient died this month from remittent fever, which proved fatal, not from the severity of the attack in all probability, but from extensive disease of the heart, under which he had laboured for years. The pericardium adhered to the heart by cellular connections throughout its whole extent, the organ itself was hypertrophied and incipient disease of the mitral valves existed.

This cardiac disease seemed to have resulted from a weight having accidentally fallen on his chest some years before and had often

caused him to complain of pain in the chest, and difficulty of breathing. During the fever the pulse intermitted every two or three beats, and continued to do so, till shortly before death.

In October, intermittent fevers continued to prevail, generally however, mild in their attack, and seldom showing great local determination. In only two cases was the spleen the seat of congestion, and in one of these, diarrhœa had for sometime also co-existed.

The treatment pursued was similar to that mentioned for the intermittents of the preceding month; the convalescence was rapid, but re-admissions were frequent, from the weakly state of the men owing to their suffering from former disease. Considering this, I conceive that the attacks were very manageable; and I think that during the whole month, only two cases verged towards a remittent type, one of which was accompanied, or rather followed by Icterus; both however became quotidian and afterwards were readily cured.

Finally throughout these months, quotidian was the most common form of intermittent fever and not one case of quartan occurred.

At the end of October, the detachment of Queen's troops and the invalids of the Bombay artillery embarked in boats for Bombay whither it was deemed expedient by a medical committee to send them, in consequence of their being totally unfit for any service, and their having been constantly liable to recurrence of disease.

In the month of November, among the thirty or forty artillery men and Warrant officers of the ordnance department left at Bukkur, intermittent fever was almost the only disease. One case of rather severe remittent was admitted early in the month, but it readily yielded to treatment; and the intermittents were generally manageable, the patient seldom having more than two paroxysms after admission. Convalescence was rapid, and re-admissions less frequent.

*General Remarks.* As particular circumstances led to the great mortality amongst the Europeans, (more especially that from cerebral disease,) it would be wrong to form any estimate from that experience, of the effect of the climate on healthy troops in good barracks with their diet and habits carefully attended to; yet I believe the above disease may be considered endemic to the country, and always likely to occur more or less amongst troops and to be the cause of mortality, although the prophylactic means of good housing and careful diet might do much in warding off this, as well as other diseases from which we suffered. Yet the climate which would confine men within doors for eight months in the year during the greater part of the day, and the continued great heat of night as well

as day during at least six months, must necessarily prove most injurious to the health of the European soldier; moreover, the debility and relaxation induced by confinement and want of exercise, must predispose them to be more readily acted on by malaria during the latter months of the inundation. We may therefore reasonably conclude (and our experience goes to confirm the inference) that Sukkur is never likely to be a healthy station for European troops; and most certainly, they never could undertake any active service in the field for at least six months in the year without the greatest risk to life.

*Health of the Native Troops.* While the European troops were suffering from the formidable disease of the hot season, the Native troops retained a state of healthiness seldom surpassed at any station in India; and only a few cases of apoplexy or insolation occurred among them.* Nor did they suffer from the violent remittent fevers that affected the European soldiers. Diarrhœas and slight dysentery were the most common complaints; these yielded to the simplest remedies, and were no doubt in a great measure caused by the cucumbers eaten in quantity during that season, from an impression of their cooling nature, entertained both by the sepoys and natives of the country.

I have mentioned that in these cases of bowel complaint, the ipecacuanha and gentian proved very successful; and indeed it continued throughout the season to be a very favourite remedy in all cases of dysentery, or that form of diarrhœa, which so often in natives, merges into a dysenteric state.

When cholera passed over us, the Native regiments suffered but little too, and only a few fatal cases occurred.

Towards the end of the hot season, when the inundation began to subside, a number of intermittent fevers occurred, yet of a very mild kind, and most readily yielding to treatment. The form was chiefly tertian, a few quotidian, and still fewer approaching the form of remittent. Few were accompanied by engorgement of the spleen or local determination of any kind.

Now we began to experience the advantage of an elevated position and absence of marsh and stagnant water in the immediate neighbourhood; for while the regiments and detachments at Shikarpoor, the site and surrounding country of which I have alluded to, had a third or more of their strength in hospital, the troops here were remarkably healthy, and had as small a proportion of sick in

* Vide Appendix.

hospital as I have ever seen in Guzerat or even in the Deccan at the same season.

This ought to be borne in mind in the distribution of the Native troops in future seasons, and as small a detachment left at Shikarpoor, as is consistent with the safety of the place. Not only does the country surrounding it plainly indicate its unhealthy atmosphere, but the appearance of the Natives, the frequent structural enlargement of the spleen, and their bloated sallow faces, confirm beyond a doubt, that this is annually a hot bed of fever. Few cases however of the many that occurred at that place proved fatal, but the health of the men was much shattered, and they were long after recovery, weakly, and unfit for any active duty; while, as the cold season approached, they were rendered subject to rheumatism, and bowel complaint, and all the catalogue of sequelæ to marsh fever, as it occurs in all swampy countries.

To return to the troops at this station, the few casualties that occurred and indeed the comparatively few admissions are the best possible proof of our healthy locality for Natives, and that this station as far as our experience goes, is the most likely in Scinde to be lightly visited by the endemic fevers of the country. No doubt bad seasons will occur, as they do in all the marshy countries of India; but the elevation, the absence of marsh or stagnant water in the immediate neighbourhood, whence the prevalent winds blow during the miasmatic months, and the little cultivation in that direction, all render the place more eligible in a medical point of view, as a cantonment than any place I have seen in Scinde; while the sufferings this season at Tatta and Shikarpoor undoubtedly prove its superiority in point of salubrity to these places.

*Health of the Officers.* It may not be uninteresting to mention summarily the state of the officers during the last eight months, as they may be said in some degree to form a distinct class in a cantonment, and have at all times the greater means of averting the deleterious effects of climate than falls to the lot of the common soldiers and sepoys.

On our first arrival and for a part of the hot season, they were equally exposed in tents as the men, except that the tents were better adapted to keep off the solar heat, and most of them were cooled by tatties. Few got into houses till June and July and many not till later. The effects of the great and long continued heat upon all was remarkable, though none might be said to have actual disease. All complained of anorexia, lassitude, debility, and loss of flesh, while

the least exertion caused profuse perspiration, and the greatest annoyance from prickly heat (lichen tropicus) which every one suffered much more from than at any former time in India.

A few cases of bowel complaint occurred, but not deserving particular notice, one officer of the Bengal army had a relapse of dyspepsia from which he had suffered severely in the upper provinces before and was obliged to go to Simla for change of climate; and one officer of the Indian Navy was obliged to go to the sea-coast after suffering from dysenteric symptoms and intermittent fever, his health having been impaired by a former attack of fever.

In August, September, and October, several cases of fever occurred, in all about twelve, but of the mildest form of intermittent and all yielding readily to the usual treatment; many of the attacks were merely ephemeral, and recovery was generally rapid; only one approached the remittent form, as far as I am aware of, occurring in August and connected with and aggravated by biliary derangement. It was however soon checked, and the officer soon recovered his health and strength.

*Surgical cases.* In a field hospital it may be expected that something may have occurred amongst the surgical cases deserving of remark; but the wounds, simple incised, and a few gun shot, all terminated favorably and offered nothing worthy of notice. Two bad compound fractures of the bones of the leg, are also progressing favourably, and promise to leave but little deformity or lameness.

On my arrival here, I found a number of bad ulcers amongst some Bengal sick left in hospital, several of them having degenerated into phagedenic sores, and two or three afterwards during the month of August and September assumed the same appearance. One man died from exhaustion and diarrhœa, affected by this ulcer in the nates following a carbuncle. One case is in hospital now, the phagedena having attacked a suppurated bubo in both groins, in an unhealthy state of body. Strong solutions of sulph. cupri. and diluted nitric acid, seemed to have the greatest power in checking the spreading of the sores, while opium and quinine were administered internally, and when diarrhœa supervened, as it often did, absorbent medicines were given, such as pulvis cretæ cum opio and the like.

Dracunculus was a very common disease, but in all cases imported, I have not seen or heard of its occurring in any part of Scinde as a disease of the country.

Ecthymatous ulcers were very common throughout the season at

Sukkur, but much more so at Shikarpoor and in some detachments on field service. Of a detachment consisting of a Jemadar and thirty men of the 1st Grenadier Regiment N. I. at Rajhan, during October and November, I believe only four or five escaped them. They appear chiefly on the lower extremities, though no part of the body is exempt.

The natives attribute them entirely to the bad water, which might be partly the cause at Rajhan and elsewhere but not at Sukkur where all used the excellent water of the Indus. Bad or improper food and malarious influence (the latter an acknowledged cause) are much more likely to have produced the disease and these apply to wherever it made its appearance.

The treatment consisted constitutionally in cathartics, alteratives and tonics, and locally in washes of solution of nitrate of silver or sulphate of copper with simple dressing. They in general yielded readily to this treatmeut.

The number of deaths throughout the season, in the native general hospital, may be thought numerous; but they are really not so, if we take into consideration, that it was first composed of the sick of the Bengal and Bombay columns; and that at all times the sick of details and detachments of these and of H. M. Shah Soojah's troops, and of commissariat and camp followers to the number of from eight to ten hundred were received and treated there.

Camp Sukkur,
1st. December, 1839.

I.— *General return of European sick in the Field General Hospital, Sukkur from 1st March, to 30th June,* 1839.

| Diseases. | March. | | | | | | April. | | | | | | May. | | | | | | June. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Remained on the 1st. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. |
| Apoplexia | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | 1 | .. | .. | 5 | 5 | .. | 5 | .. |
| Ascitis | .. | 1 | 1 | .. | .. | 1 | 1 | 1 | 2 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Asthma | .. | 2 | 2 | .. | .. | 2 | 2 | 1 | 3 | 2 | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 |
| Bronchitis | 3 | 3 | 6 | 3 | .. | 3 | 3 | .. | 3 | 2 | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Bubo Simplex | 2 | .. | 2 | 2 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Catarrhus | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cephalalgia Acuta | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| " Chronica | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 |
| Cholera Spasmodica | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | .. | 3 | .. |
| Contusio | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Cynanche Tonsillaris | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Delirium Tremens | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Diarrhœa | 1 | 2 | 3 | 1 | .. | 2 | 2 | 8 | 10 | 4 | 1 | 5 | 5 | 5 | 10 | 9 | .. | 1 | 1 | 1 | 2 | .. | 1 | 1 |
| Dysenteria Acuta | .. | 1 | 1 | .. | .. | 1 | 1 | 2 | 3 | 2 | .. | 1 | 1 | 1 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 1 | 1 |
| " Chronica | 5 | 8 | 13 | 5 | 3 | 5 | 5 | .. | 5 | 3 | .. | 2 | 2 | 1 | 3 | 2 | .. | 1 | 1 | 2 | 3 | 1 | .. | 2 |
| Erysipelas | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Erythema | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Febris Continua | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | 2 | .. |
| " Remittens | 6 | 2 | 8 | 7 | .. | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 8 | 9 | 4 | 1 | 4 | 4 | 22 | 26 | 20 | 1 | 5 |
| " Intermittens | .. | 1 | 1 | .. | .. | 1 | 1 | 2 | 3 | 2 | .. | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | .. | .. |
| Fistula in Ano | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Fractura (Tibiæ) | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 |
| Gastralgia | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Gastritis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Gonorrhœa | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | 1 | 2 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| Hepatitis Acuta | 1 | .. | 1 | 1 | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | 1 | 2 | .. | .. | 2 | 2 | 2 | 4 | 3 | .. | 1 |
| " Chronica | 5 | .. | 5 | 3 | .. | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | 2 | .. | .. | .. | 2 | 2 | .. | .. | 2 |
| Hernia (Scroti) | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Hydrocele | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | 2 | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| Icterus | .. | 1 | 1 | 1 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Iritis | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Lithia | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Opthalmia Acuta | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| " Chronica | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | 1 | .. | 1 |
| Otitis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Pneumonia | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Punitus | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | 1 | 1 | .. | .. | 1 |
| Rheumatismus | 10 | 5 | 15 | 8 | .. | 7 | 7 | 5 | 12 | 8 | .. | 4 | 4 | 2 | 6 | 2 | .. | 4 | 4 | 1 | 5 | 5 | .. | 1 |
| Scrofula | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | .. |
| Splenitis | 1 | 1 | 2 | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Strictura Urethræ | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Subluxatio | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Syphilis Primitiva | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Ulcus | 2 | 2 | 4 | 1 | .. | 3 | 3 | 3 | 6 | 2 | .. | 4 | 4 | 1 | 5 | 4 | .. | 1 | 1 | 3 | 4 | .. | .. | 4 |
| Vulnus | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Total | 42 | 35 | 77 | 37 | 3 | 37 | 37 | 37 | 74 | 39 | 2 | 33 | 33 | 29 | 62 | 35 | 5 | 22 | 22 | 50 | 72 | 37 | 13 | 22 |

II. — *General Return of European sick &c., from July to October 31st, 1839.*

| Diseases. | July. | | | | | | August. | | | | | | September. | | | | | | October. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. |
| Apoplexia | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Ascitis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Asthma | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| Bronchitis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Bubo Simplex | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Catarrhus | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cephalalgia Acuta | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | 1 |
| " Chronica | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| Cholera Spasmodica | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Contusio | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cynanche Tonsillaris | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Delirium Tremens | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Diarrhœa | 1 | .. | 1 | .. | .. | 1 | 1 | 2 | 3 | 2 | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| Dysenteria Acuta | 1 | 1 | 2 | 1 | .. | 1 | 1 | 4 | 5 | 4 | .. | 1 | 1 | 3 | 4 | 2 | .. | 2 | 2 | 4 | 6 | 6 | .. | .. |
| " Chronica | 2 | .. | 2 | 1 | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | 1 | .. |
| Erysipelas | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Erythema | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Febris Continua | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| " Remittens | 5 | 5 | 10 | 7 | .. | 3 | 3 | 4 | 7 | 6 | .. | 1 | 1 | 4 | 5 | 2 | 1 | 2 | 2 | 2 | 4 | 4 | .. | .. |
| " Intermittens | .. | .. | .. | .. | .. | .. | .. | 5 | 5 | 2 | .. | 3 | 3 | 12 | 15 | 14 | .. | 1 | 1 | 22 | 23 | 20 | .. | 3 |
| Fistula in Ano | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Fractura (Tibiæ) | 1 | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Gastralgia &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Gastritis | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Gonorrhœa | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Hepatitis Acuta | 1 | 3 | 4 | 2 | .. | 2 | 2 | .. | 2 | 1 | .. | 1 | 1 | 1 | 2 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| " Chronica | 2 | 2 | 4 | 2 | .. | 2 | 2 | 3 | 5 | 2 | .. | 3 | 3 | 1 | 4 | 2 | 1 | 1 | 1 | .. | 1 | 1 | .. | .. |
| Hernia (Scroti) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Hydrocele | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Icterus | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Iritis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Lithia | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Opthalmia Acuta | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| " Chronica | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Otitis | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Pneumonia | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Punitus | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Rheumatismus | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Scrofula | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. |
| Splenitis | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. |
| Strictura Urethræ | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Subluxatio | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Syphilis, Primitiva | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Ulcus | 4 | .. | 4 | 1 | .. | 3 | 3 | .. | 3 | 1 | .. | 2 | 2 | 1 | 3 | 1 | .. | 2 | 2 | 2 | 4 | 4 | .. | .. |
| Vulnus | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Total | 22 | 14 | 36 | 18 | 1 | 17 | 17 | 20 | 37 | 21 | .. | 16 | 16 | 26 | 42 | 26 | 2 | 14 | 14 | 33 | 47 | 42 | 1 | 4 |

III. — — *General return of European sick &c., for November* 1839, *with total from 1st March.*

| Diseases. | November. | | | | | | Grand Total. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained on the 1st March. | Admitted. | Total. | Discharged. | Died. | Remaining on the 29th Nov. |
| Apoplexia | .. | .. | .. | .. | .. | .. | .. | 6 | 6 | .. | 6 | .. |
| Ascitis | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 2 | .. | .. |
| Asthma | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | 3 | .. | .. |
| Bronchitis | .. | .. | .. | .. | .. | .. | 3 | 3 | 6 | 6 | .. | .. |
| Bubo Simplex | .. | .. | .. | .. | .. | .. | 2 | 2 | 4 | 4 | .. | .. |
| Catarrhus | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Cephalalgia Acuta | 1 | .. | 1 | 1 | .. | .. | .. | 3 | 3 | 3 | .. | .. |
| " Chronica | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 2 | .. | .. |
| Cholera Spasmodica | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | .. | 3 | .. |
| Contusio | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | 3 | .. | .. |
| Cynanche Tonsillaris | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. |
| Delirium Tremens | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Diarrhœa | .. | .. | .. | .. | .. | .. | 1 | 18 | 19 | 17 | 2 | .. |
| Dysenteria Acuta | .. | .. | .. | .. | .. | .. | .. | 18 | 18 | 15 | 3 | .. |
| " Chronica | .. | .. | .. | .. | .. | .. | 5 | 11 | 16 | 12 | 4 | .. |
| Erysipelas | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Erythema | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Febris Continua | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | 2 | .. |
| " Remittens | .. | 2 | 2 | 1 | .. | 1 | 6 | 57 | 51 | 52 | 4 | 1 |
| " Intermittens | 3 | 10 | 13 | 10 | .. | 3 | .. | 55 | 55 | 51 | 1 | 3 |
| Fistula in Ano | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Fractura (Tibiæ) | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | 1 | .. |
| Gastralgia | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Gastritis | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Gonorrhœa | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | 3 | .. | .. |
| Hepatitis Acuta | .. | .. | .. | .. | .. | .. | 1 | 8 | 9 | 9 | .. | .. |
| " Chronica | .. | .. | .. | .. | .. | .. | 5 | 8 | 13 | 12 | 1 | .. |
| Hernia (Scroti) | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Hydrocele | .. | .. | .. | .. | .. | .. | 1 | 2 | 3 | 3 | .. | .. |
| Icterus | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 2 | .. | .. |
| Iritis | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Lithia | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Opthalmia Acuta | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| " Chronica | .. | .. | .. | .. | .. | .. | 2 | .. | 2 | 2 | .. | .. |
| Otitis | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Pneumonia | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. |
| Punitus | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 2 | .. | .. |
| Rheumatismus | .. | .. | .. | .. | .. | .. | 10 | 15 | 25 | 25 | .. | .. |
| Scrofula | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Splenitis | .. | .. | .. | .. | .. | .. | 1 | 5 | 6 | 6 | .. | .. |
| Strictura Urethræ | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Subluxatio | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. |
| Syphilis Primitiva | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Ulcus | .. | .. | .. | .. | .. | .. | 2 | 12 | 14 | 14 | .. | .. |
| Vulnus | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. |
| Total | 4 | 12 | 16 | 12 | .. | 4 | 42 | 256 | 298 | 267 | 27 | 4 |

## IV. — *General return of Native sick in the Field Hospital, Sukkur, from 1st March, to 30th September, 1839.*

| Diseases. | March. | | | | | | April. | | | | | | May. | | | | | | June. | | | | | | July. | | | | | | August. | | | | | | September. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. |
| Asthma | .. | 7 | 7 | 4 | 1 | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | 2 | 4 | 1 | .. | 3 | 3 | .. | 3 | 2 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cholera | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 4 | 2 | 1 | 1 | 1 | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Cephalalgia Acuta | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Colica | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | 1 |
| Cutaneous Diseases | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | 1 | .. | .. | 1 |
| Cynanche Parotidea | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 2 | .. | .. | .. |
| Diarrhœa | .. | 12 | 12 | 11 | .. | 1 | 1 | 2 | 3 | 3 | .. | .. | .. | 3 | 3 | .. | .. | 3 | 3 | 8 | 11 | 8 | .. | 3 | 3 | 11 | 14 | 10 | 1 | 3 | 3 | 19 | 22 | 13 | 1 | 8 | 8 | 9 | 17 | 16 | .. | 1 |
| Dracunculus | .. | 3 | 3 | .. | .. | 3 | 3 | .. | 3 | .. | .. | 3 | 3 | 1 | 4 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 13 | 13 | 6 | .. | 7 | 7 | 4 | 11 | 6 | .. | 5 | 5 | 9 | 14 | 6 | .. | 8 |
| Dropsical affection | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Dysenteria | .. | 15 | 15 | 10 | 2 | 3 | 3 | .. | 3 | .. | .. | 3 | 3 | 3 | 6 | 4 | .. | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | 1 | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | 1 | .. |
| Dislocatio | .. | 2 | 2 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Elephantiasis | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Fractura Complex | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | .. | .. | 2 |
| Febris Remittens | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| „ Intermittens | .. | 30 | 30 | 20 | 3 | 7 | 7 | 7 | 14 | 7 | .. | 7 | 7 | 17 | 24 | 14 | .. | 10 | 10 | 8 | 18 | 6 | .. | 12 | 12 | 11 | 23 | 16 | .. | 7 | 7 | 12 | 19 | 14 | 2 | 3 | 3 | 63 | 66 | 46 | .. | 20 |
| Hepatitis Chronica | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Hœmorhoides | .. | 2 | 2 | 1 | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | 1 | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 |
| Inflammatio External | .. | 1 | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 1 | .. | 1 | 1 | 2 | 3 | 2 | .. | 1 | 1 | 11 | 12 | 7 | .. | 5 | 5 | 7 | 12 | 8 | .. | 4 | 4 | 7 | 11 | 9 | .. | 2 |
| Mania | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 |
| Opthalmia Acuta | .. | 4 | 4 | 2 | .. | 2 | 2 | .. | 2 | 1 | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | 3 | 4 | 1 | .. | 3 | 3 | .. | 3 | 1 | .. | 2 | 2 | .. | 2 | .. | .. | 2 |
| Phthisis Pulmonalis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Paralysis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Rheumatismus | .. | 35 | 35 | 22 | .. | 13 | 13 | 3 | 16 | 4 | .. | 12 | 12 | 7 | 19 | 10 | 1 | 8 | 8 | 1 | 9 | 3 | .. | 6 | 6 | 9 | 15 | 9 | .. | 6 | 6 | 2 | 8 | 4 | .. | 4 | 4 | 3 | 7 | 2 | .. | 5 |
| Syphilis Primitiva | .. | 8 | 8 | 5 | .. | 3 | 3 | .. | 3 | 1 | .. | 2 | 2 | 1 | 3 | 2 | .. | 1 | 1 | 10 | 11 | 2 | .. | 9 | 9 | 18 | 27 | 14 | .. | 13 | 13 | 5 | 18 | 11 | .. | 7 | 7 | 4 | 11 | 3 | 1 | 7 |
| „ Second | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | 1 | .. | 1 | 1 | .. | 1 | .. | .. | 1 |
| Ulcus | .. | 17 | 17 | 6 | .. | 11 | 11 | .. | 11 | 1 | .. | 10 | 10 | 9 | 19 | 6 | 1 | 12 | 12 | 3 | 15 | 3 | .. | 12 | 12 | .. | 12 | 7 | .. | 5 | 5 | 1 | 6 | 2 | .. | 4 | 4 | .. | 4 | 3 | .. | 1 |
| Variola | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Vulnus | .. | 10 | 10 | 5 | .. | 5 | 5 | 3 | 8 | 4 | .. | 4 | 4 | 6 | 10 | 5 | .. | 5 | 5 | 3 | 8 | 6 | .. | 2 | 2 | 2 | 4 | 1 | .. | 3 | 3 | 2 | 5 | 1 | .. | 4 | 4 | 2 | 6 | .. | .. | 6 |
| Total | .. | 151 | 151 | 91 | 6 | 54 | 54 | 16 | 70 | 23 | .. | 47 | 47 | 54 | 101 | 52 | 2 | 47 | 47 | 43 | 90 | 33 | 1 | 56 | 56 | 79 | 135 | 76 | 3 | 56 | 56 | 54 | 110 | 61 | 3 | 46 | 46 | 102 | 148 | 88 | 2 | 58 |

V. — *General return of Native sick, for October and November* 1839, *with grand total.*

| Diseases. | October. | | | | | | November. | | | | | | Grand Total. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. | Admitted. | Discharged. | Died. | Remaining. |
| Asthma | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | 1 | .. | 2 | 12 | 8 | 2 | 2 |
| Cholera | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 2 | 2 | .. |
| Cephalalgia Acuta | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. |
| Colica | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. |
| Cutaneous Diseases | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. |
| Cynanche Parotidea | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. |
| Diarrhœa | 1 | 13 | 14 | 7 | .. | 7 | 7 | 8 | 15 | 9 | 2 | 4 | 85 | 77 | 4 | 4 |
| Dracunculus | 8 | 4 | 12 | 5 | .. | 7 | 7 | 7 | 14 | 8 | .. | 6 | 41 | 35 | .. | 6 |
| Dropsical affection | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 1 | .. | .. | 1 |
| Dysenteria | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 18 | 17 | 1 | .. |
| Dislocatio | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. |
| Elephantiasis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. |
| Fractura Complex | 2 | .. | 2 | .. | .. | 2 | 2 | .. | 2 | .. | .. | 2 | 2 | .. | .. | 2 |
| Febris Remittens | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. |
| „ Intermittens | 20 | 92 | 112 | 79 | 1 | 32 | 32 | 90 | 122 | 66 | 1 | 55 | 330 | 268 | 7 | 55 |
| Hepatitis Chronica | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 1 | 2 | 1 | .. | 1 |
| Hæmorhoides | 1 | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | .. | .. | 2 | 4 | 2 | .. | 2 |
| Inflammatio External | 2 | 1 | 6 | 5 | .. | 1 | 1 | 7 | 8 | 6 | .. | 2 | 41 | 39 | .. | 2 |
| Mania | 1 | .. | 1 | .. | .. | 1 | 1 | .. | 1 | .. | .. | 1 | 2 | 1 | .. | 1 |
| Opthalmia Acuta | 2 | 1 | 3 | .. | .. | 3 | 3 | .. | 3 | .. | .. | 3 | 9 | 6 | .. | 3 |
| Phthisis Pulmonalis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. |
| Parnlysis | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 1 | .. | 1 | 2 | 1 | .. | 1 |
| Rheumatismus | 5 | 5 | 10 | 6 | 1 | 3 | 3 | 6 | 9 | 4 | .. | 5 | 71 | 64 | 2 | 5 |
| Syphilis Primitiva | 7 | 10 | 17 | 11 | .. | 6 | 6 | 6 | 12 | 3 | .. | 9 | 62 | 52 | 1 | 9 |
| „ Second | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. |
| Ileus | 1 | 6 | 7 | 1 | 1 | 5 | 5 | 9 | 14 | 4 | .. | 10 | 45 | 33 | 2 | 10 |
| Variola | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | 4 | .. | .. |
| Vulnus | 6 | 7 | 13 | 7 | .. | 6 | 6 | 1 | 7 | 3 | .. | 4 | 36 | 32 | .. | 4 |
| Total | 58 | 142 | 200 | 123 | 3 | 74 | 74 | 142 | 216 | 105 | 3 | 108 | 783 | 654 | 21 | 108 |

* The sick of details of the 1st Grenadier and H. M. Shah Soojah's Provincial Battalion were admitted into hospital this month from Shikarpoor.

## Article II.

*Notes on the Medical Topography of Tatta on the river Indus with a short notice of the diseases which prevailed in the 22d Regiment N. I., when stationed at Tatta or in progress up the river Indus in boats, during the months of August, September and October* 1839. By J. Inglis, M. D.

Presented by the Medical Board, February, 1840.

The town of Tatta situated in latitude 24° 44″ north, and longitude 68° 15″ east, is built on a mound of small elevation in the centre of the alluvial plain of the river Indus and about three miles inland from the right or western bank. It is very little elevated above the level of the sea, from which it is distant about seventy miles in a straight direction, though much more by the windings of the river.

Tatta is surrounded on all sides by low grounds which during the inundation are irrigated for cultivation. About a mile to the west of the town a ridge of limestone hill elevated about eighty or an hundred feet above the level of the plain, runs for three or four miles in a direction from north to south. To the eastward the ascent is rather precipitous, and the general range of the hill is very irregular, forming many projecting points, between which, the indentations during the rains and inundation are filled with water, and either form extensive tanks or are used for rice cultivation. But during the dry weather the water becomes quite brackish, and is entirely dried up before the return of the inundation. In consequence of the decomposition of animal and vegetable matter the effluvia is intolerable.

To the westward the descent is more gradual to another plain of great extent which is also irrigated by canals cut from the Indus.

The hill is formed almost entirely of limestone, chiefly in the form of conglomerate at the surface, resting on hardened clay of a yellowish colour; but in some directions a coarse grained sandstone can be seen at the bottoms of the ravines.

The surface of the ridge is generally flat and smooth, hard and dry, but with an inclination towards the north and west such as to prevent the rain resting on it for any time. It was densely covered with cactus or prickly pear; this has been cut down in every

place near the camp, but in all other directions a great quantity still remains. It is the only jungle that I know of for a considerable distance from the cantonment, for only a few other shrubs and bushes and stunted babul trees are to be seen growing on the hill.

On this ridge the camp was formed fronting to the west and from its elevated site, and the general appearance of the country, for every thing was dry and there were no signs of swampy grounds; it promised to be a much more healthy place than it has turned out to be.

Towards the end of May the inundation from the river ascending in canals cut for the purpose of irrigation came up to the low ground both to the east and west of the cantonment, filling all the tanks and low grounds in the vicinity. To the eastward a bund was thrown across between two projecting points of the hill so as to confine the water for use during the dry weather, but time was not afforded for deepening it and a good deal of long rank grass grew up near the edges. In another part behind the lines of the 26th regiment between two other projecting points of the hill, the water collected in considerable depth and the cultivation of rice was carried on in it; long rank grass and other vegetation being also luxuriant.

But I believe, that it is not to these sources we are to attribute the great unhealthiness of the cantonment, as the wind never for an instant blew from that quarter; but that we must look to the westward for the cause of all our troubles. In that direction the ground is equally low with that to the eastward, and forms an extensive plain for many miles, irrigated by canals from the Indus. In many parts, the rain which fell chiefly in July, uniting with the waters of the inundation collected and formed extensive swamps; one of these about a mile or two to the west of the camp had much the appearance of a lake after a heavy fall of rain, but in the end of August and September it began to dry up and as the wind never ceased blowing day or night from west and south-west until the 9th October, it is I think fair to infer that all the malaria must have come from that quarter.

Some gentle rain fell on the 19th February, and a very violent storm of thunder, lightning and rain, took place on the 19th March. On the 20th April it was cloudy with thunder and every appearance of rain but none fell in camp.

The monsoon rains fell chiefly in July when there were seven days on which it rained, one drizzling shower in August and two days rain in September and in this consisted the whole monsoon.

To us who are accustomed to India, the monsoon at Tatta appeared a very slight one; the rain, although sometimes rather heavy, falling only for a few days at a time, with weeks of intervening dry weather, but the natives of the place declared it to have been the heaviest that had happened to them for many years. Not being provided with a pluviometer, I am unable to say what quantity of rain fell, but do not suppose it could have exceeded eight or ten inches.

*Winds.* Strong cold bleak and dry northerly and north easterly winds prevailed from November until March; after which they almost uniformly blew very strongly both day and night from the west and south-west bringing with them clouds of dust; with the exception of a day or two at a time occasionally during the hot months when a hot dry wind blew from the north and north-east.

Thermometer's lowest range at sunrise in January, February 43° to 68° highest, during the day 75° to 88° in March to April at sun rise 50° to 74° highest during the day, 90° to 111° May and June lowest, 75° to 86° highest during the day 90° to 112° during that period the sick were in tents, but removed to the temporary hospital on the 10th June. In July, August, and September, lowest range at sunrise 74° to 88° highest 79° 100°.

*Meteorological Register of the 22d Regiment Bombay N. I. at Tatta and on the Indus, for the Months of August, September, and October,* 1839.

| | Extreme Minimum. | Extreme Maximum. | Mean of daily Minima. | Mean of daily Maxima. | Observations. |
|---|---|---|---|---|---|
| August | 81 | 93 | 82 | 89 | The weather has been uniformly cool and pleasant during the month, the mornings being cool and generally cloudy, midday heat moderate, with cloudy and sunshining intervals, and high wind, nights were remarkably cool with steady fresh south west and westerly breeze; atmosphere moist; no rain fell.<br>Wind S. and S. W. |
| September | 76 | 92 | 78 | 89 | Mornings, evenings and nights, were cool and pleasant and generally cloudy, with occasional high blustering wind; midday heat rather oppressive at times and sometimes cloudy with high wind and clouds of dust.<br>Heavy fall of rain and squalls on the nights of the 14th and 15th with thunder and lightning.<br>Wind S. W. and W. |
| October | 61 | 94 | 74 | 90 | Mornings and evenings were cool and pleasant with dense fog in the mornings and heavy dew during the nights; middays calm and sultry and occasionally cloudy whilst at Tatta from 1st to the 14th, and on the Indus mornings were much cooler and chilly, midday heat more oppressive, clear and calm.<br>Wind S. W. and W. latterly variable and from the Northward. |

*State of health of the 22d regiment.* With reference to the state of health of the 22d Regiment N. I., during the months of August, September and October, it may not be unnecessary or uninteresting to premise, that with the exception of cholera, which prevailed in March and carried off a good many patients; and also a few other cases of the same disease in subsequent months; the regiment has been comparatively healthy since we came to Scinde in January last. The daily average number of sick about thirty-three when the whole regiment was at head quarters, and many of these were of local complaints which might have occurred in any country. With the exception of cholera, only one casualty occurred under my charge, and that from remittent fever previous to the 1st August, and another from the same disease when the left wing was at Baminakote under charge of the Assistant Surgeon there. Some severe and dangerous cases of remittent fever and pleuritis had taken place; but all with the exceptions above mentioned yielded to the treatment adopted.

On the recession of the inundation and the partial drying up of the swampy ground above alluded to, disease in the form of fever (generally intermittent,) began to make its appearance about the 20th of August, but it was not until the middle of September and October, that it prevailed to the fearful extent it did. The greatest number of patients in hospital at any one time, was on the 4th October, when it amounted to 237, besides 57 convalescents. After that they diminished gradually and the disease declined day by day whilst we remained at Tatta.

During August, September, and part of October, the regiment was stationed at Tatta, but at the beginning of the latter month, notwithstanding the great sickness and my representation that we ought to remain quiet till November, we were ordered to be in readiness to embark on the Indus for Bukkur whenever boats were procured, leaving the sick and weakly men behind. On the 12th, the regiment marched to the bunder and having embarked, sailed on the 15th, leaving behind, 170 sick in hospital, and 22 convalescents and unfits.

Many men who were anxious to accompany the regiment were permitted to do so, although considerably reduced in strength by previous fever. I have since had reason to regret having acceded to their wishes, as a number of them have had relapses, and besides, the two casualties which have taken place since we came into the boats, several others have been at the point of death.

*Intermittent fever.* It would be superfluous in me to give a detailed statement of the symptoms of a disease so well known in India as intermittent fever, and which has been described so often and so much better than I can possibly do it; suffice it to say that the intermittent at Tatta differs little from that which prevails endemically in Guzerat at the termination of the monsoon. The greatest difference I could observe, was that, when the disease first broke out the paroxysm was not ushered in by so severe nor so long continued a cold fit as in the Guzerat fever; latterly the cold fit in a number of patients has been violent and of considerable duration. The disease in by far the greater number of cases, was of the quotidian type, in some a kind of double quotidian, a regular paroxysm occurring in the day and another during the night. Hitherto there have been few instances of tertian fever, and I have only seen one quartan and that lately, but I have no doubt that later in the season these forms of fever will become more numerous, indeed the cases of tertian are already increasing, especially among those who have relapses.

The total absence or slight degree of cold fit, the double quotidian, and the few cases of tertian and quartan seem to indicate a disease of a more violent nature than that of Guzerat; one more nearly approaching the remittent form. And I have never seen intermittent fever reduce the strength, and the general appearance of the patients so rapidly and so completely as the present one.

*Treatment.* The method adopted was on admission to prescribe an emetic of ipecacuanha with antim: tartarizat: followed by a purgative or what is equally effectual, as it acts in both ways, is an ounce of magnesiæ sulphas with one grain of antimon: tartarizat: a fever pill consisting of calomel with pulv: antimon: was given twice or three times daily, but it was seldom found necessary or advantageous to affect the system with mercury; and in only a few instances was it carried to the extent of causing the gums to swell, but I invariably use it, having so long experienced its beneficial effects in fever. Should the tongue continue foul and loaded, a purgative must be administered every other day or the calomel and pulv: antimon: in small doses be given, in powder which generally operates both as an emetic and purgative, and seldom fails to bring the tongue to its natural appearance.

Various other purgatives were given and sometimes conjoined with small doses of antim: tartarizat: and saline and diaphoretic draughts also, during the accession of fever. Decoct: et pulv: cin-

chonæ, infus: gentianæ comp: or infus: cheryatæ were always prescribed as tonics. Bleeding was had recourse to in several instances where the paroxysm was severe, and invariably with the greatest advantage, as it always diminished the length both of the cold and hot fit; but generally speaking it was not required. Quinine the only really efficient anti-periodic was reserved for the worst and most obstinate cases, as although tolerably well supplied with it, I had not a sufficient stock to give to all where there were so many patients; but have no doubt that if a sufficient quantity of that invaluable medicine to treat every case of intermittent, were supplied to regimental hospitals, that many lives would be saved, and many men preserved to the service whose constitutions are completely broken by a long course of fever.

In all obstinate and severe cases, quinine was given in doses of five or six grains once or twice, a short time before the expected accession of fever, and with almost uniform success. But it requires to be continued for some time at each returning period; otherwise the disease is apt to come on again, and the same course must be again pursued.

*Remittent fever.* Has been much more frequent and of a greater degree of intensity and more malignant nature than I have ever seen it amongst natives in the Guzerat fever, and in most of the cases it has been in young men, Mahrattas who have lately joined the regiment, and who never were in Guzerat. Nearly all the casualties have taken place amongst them and in some of them in a very short period after admission. One died in forty eight hours and another, since we left Tatta, in twenty-seven hours after I first saw them, but from the symptoms and their general appearance on admission, I am certain they must have been labouring under the disease for some days previously; but from the well known character for falsehood among natives, it was impossible to get at the truth. The older sepoys have generally had it as an intermittent.

It is not common to find a native present himself to his medical attendant immediately at the commencement of any disease, it is therefore difficult to enumerate the symptoms from the beginning. Few of them have complained of a sense of coldness or shivering; on the contrary the skin has been above the natural standard, dry and harsh without any tendency to moisture; the tongue rough and furred, of a brown colour, dry and hard like a piece of board, or loaded in the centre with the edges and tip of a red colour; intense thirst; irritation of the stomach, with nausea and vomiting of all

liquids swallowed; the pulse quick small and contracted; great restlessness and jactitation; bowels generally costive; urine scanty and high coloured. No complaint was made of pain in the region of the liver (though jaundice has not been uncommon) and only occasionally in other parts of the abdomen. A slight remission of all these symptoms occasionally took place, but without any regularity; and the disease continued for days without much alteration.

In some cases it was complicated with inflammatory action in the thoracic viscera, inducing cough and dyspnœa; but by far the most frequent complication was with an inflammatory affection of the brain, almost approaching to meningitis. In these cases, in addition to the symptoms above enumerated, there is a wild and stupid staring appearance of the countenance, inability to answer questions correctly; the pupils at first generally contracted and obedient to the light, latterly dilated and fixed; great anxiety and nervous agitation and excitement; tremulous motion of the fingers and tongue; subsultus tendinum; frequently jaundice; followed by drowsiness, insensibility, stertorous breathing, involuntary stools, coma and death. In some, there have been short bursts of outrageous delirium.

*Treatment.* In the cure of remittent fever the lancet was generally had recourse to, once or twice and sometimes more frequently, particularly if there was any complication and the blood exhibited the buffy coat; but in general, natives do not stand free blood-letting well; leeches to the temples and blisters to the nape of the neck or if requisite all over the head, are most valuable remedies.

Strong purgatives, particularly mercurial ones must always be given; and I generally prescribe calomel and pulvis antimonialis, in considerable doses, twice or three times daily. Diaphoretic draughts with antimonial wine were always administered, with the view, if possible, of exciting perspiration, and in the complication with pectoral inflammation, the antim: tartarizat: in doses of two grains every second hour with a small quantity of tinct: morphiæ muriat: I have found a valuable medicine.

Whenever a distinct intermission or even a proper remission can be observed, quinine ought to be given in large doses, as by it another accession of fever may be prevented and the life of the patient saved.

I have not been able to ascertain correctly what number of those who were left behind at Tatta have died, but it must have been considerable, as the disease is said to have increased much in virulence and fatality after we came away; so much so, that the greater part

of the troops is said to have moved on to Garrah as being a more healthy place.

*Fever in Europeans.* The number of European officers in the regiment being so small as to amount only to eleven there have been few of them affected with the disease. Two officers having a strong tendency to intermittent fever had it in that form, but were easily cured by the usual remedies, with quinine as an anti-periodic. In almost every other European attacked it has been in the remittent form. One officer was attacked with remittent fever just as we left Tatta, was sent to Karrachee, and eventually to Bombay. Another has had remittent fever since we have been in the boats, brought on in a great measure by exposure to the sun. The fever itself was not well defined consisting of alternate flushes of heat and rigors, the surface continuing constantly above the natural standard, the pulse quick and full; tongue loaded, great sense of debility and severe head-ache.

A single copious bleeding from the arm together with purgatives and mercurials soon effected a cure.

In treating Europeans labouring under remittent, I consider a full and copious bleeding indispensable and that, early in the disease; otherwise the cerebral affection which is always more or less present is so insidious that it may have proceeded to an incurable state before these active measures are resorted to. Leeches to the temples or cupping the nape of the neck, with blisters all over the head are most useful and ought never to be dispensed with, where there is much cerebral affection. I seldom give an emetic, as the stomach of the European is so irritable that it is difficult to allay it when once excited. Active purgatives must never be omitted and calomel with pulv: antimon: so as generally to affect the system, but that effect is not easily induced, as the constitution is with great difficulty brought under the influence of mercury, in a case of pure remittent.

Whilst the above report was in progress and since we left Sehwan on the 1st. November I have had a severe attack of remittent fever which rendered me incapable of performing my duty for many days; and will I trust be accepted as a reason for the imperfect manner in which the report has been made out, and the delay that has occurred in sending it in. An officer of the artillery who accompanied us, has also been dangerously ill with remittent, but is now fortunately in a convalescent state.

Both of us I have no doubt caught our fevers from the malaria generated on the banks of the river.

The accompanying return shows the actual state of the regiment in regard to health during the three months.

CAMP SUKKUR,
1st. December, 1839.

I. *Return of diseases in the 22nd Regiment Bombay Native Infantry stationed at Tatta and while in progress in boats up the Indus for the months of August, September, and October, 1839.*

| | | Ambustio. | Bubo. | Cholera Biliosa. | Spasmod : | Contusio. | Cutis Morbi. | Diarrhœa. | Dracunculus. | Dysenteria Acuta. | Elephantiasis. | Exostosis. | Febris Remittens. | " Intermittens Q. | " Tertian. | Furunculus. | Hœmorrhois. | Mania. | Oculi Morbi. | Phlegmon. | Pleuritis. | Pneumonia. | Rheumatismus. | Syphilis Primit : | Ulcus. | Vulnus. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Strength of the Regt. | August 849 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | September 872 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | October 868 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remained in Hospital 31st July 1839. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Admitted | August | | 2 | 1 | | 1 | 5 | 6 | | 1 | | | 3 | 38 | 3 | 7 | 1 | | 1 | | | 2 | 1 | | 2 | 6 | 83 |
| | September | 2 | | | | 1 | 3 | 2 | | 3 | | | 8 | 286 | 8 | 1 | | | 2 | 1 | | 1 | 3 | | 1 | 2 | 323 |
| | October | 1 | 1 | | | 2 | | 2 | | | | | 15 | 203 | 1 | | | | | | | | 2 | | | | 228 |
| | | 4 | 3 | 2 | 1 | 4 | 11 | 13 | 1 | 6 | 1 | 1 | 28 | 531 | 6 | 19 | 1 | 1 | 3 | 2 | 1 | 2 | 14 | 1 | 5 | 6 | 669 |
| Discharged | August | 1 | 1 | 2 | | 1 | 6 | 8 | 1 | 1 | | | 4 | 28 | 2 | 7 | 1 | | 1 | | | 2 | 5 | | 1 | 6 | 78 |
| | September | | | | | 1 | 4 | 3 | | 4 | | | 2 | 119 | | 8 | | | 2 | | | | 6 | | 3 | 2 | 159 |
| | October | 1 | | | | 1 | | | | | | | 2 | 195 | | | | | | | | | 1 | | | | 201 |
| | | 1 | 1 | 2 | | 2 | 10 | 11 | 1 | 5 | | | 8 | 342 | 2 | 19 | 1 | 1 | 2 | 2 | 1 | 2 | 11 | 1 | 4 | 8 | 438 |
| Deceased | August | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 1 |
| | September | | | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | 2 |
| | October | | | | | | | | | | | | 3 | 1 | | | | | | | | | | | | | 4 |
| | | | | | 1 | | | | | | | | 4 | 2 | | | | | | | | | | | | | 7 |
| Left at Tatta on the 13th October 1839 | | | | | | | 1 | | | 1 | 1 | 1 | 9 | 149 | | 2 | | | 1 | | | | 2 | | 1 | | 170 |
| Remaining in Hospital at the Head Quarters on the Indus 31st October 1839 | | | 2 | | | | | | | | | | 7 | 38 | 4 | | | | | | | | 1 | | | | 54 |
| | | 1 | | | | 1 | | 2 | | | | | | | | | | | | | | | | | | | |

## Article III.

## *Annual Report of the Native General Hospital at Bombay, for the year* 1838.*

Presented by the Medical Board, May 1840.

General Observations. The patients admitted during 1838, exceed those admitted during 1837 by one hundred and eighty-four, while the number of deaths falls short of that of 1837 by forty-seven, making the proportion of casualties for 1838, six per cent less than that of the preceding year, and two per cent less than that of any former year during the last ten; as will be apparent from the subjoined abstract of the annual movements of the inmates of this institution since the commencement of 1829. six months subsequent to the introduction of the present system of hospital supply.

| Years. | 1829 | 1830 | 1831 | 1832 | 1833 | 1834 | 1835 | 1836 | 1837 | 1838 |
|---|---|---|---|---|---|---|---|---|---|---|
| Remained on 31st Dec. of the preceding year | 27 | 25 | 35 | 43 | 35 | 41 | 65 | 53 | 63 | 72 |
| Admitted during each year. . . . . | 319 | 405 | 576 | 546 | 684 | 730 | 806 | 885 | 1255 | 1439 |
| Discharged. . . . . | 252 | 316 | 492 | 446 | 534 | 568 | 658 | 697 | 982 | 1203 |
| Died in Hospital . . . . . | 71 | 79 | 98 | 113 | 144 | 141 | 160 | 178 | 264 | 217 |
| Remained on 31st Dec. in each year. . . . | 25 | 35 | 43 | 35 | 41 | 65 | 53 | 63 | 72 | 91 |
| Rate of Mortality per cent in each year. . | Rather more than 20 4 | Rather less than 18 4-11ths | Rather more than 16.1-25th | Rather more than 19.1-5th | Rather less than 20.1-36th | Rather more than 18.5-12ths | Rather more than 18.5-8ths | Nearly 18.19-20ths | Nearly 20.1-33rd | Nearly 14.9-25ths |

The numbers of miserable objects in the very last stages of destitution, picked up in the streets and brought to the hospital by the Police, have been even greater than in former years, and the classes of cachexia, diarrhœa and dysentery consist in great part of such; while the increased number of wounds and accidents, and numerous cases of poisoning included in "other diseases" sent by the civil

* *Note by the Secretary.* This report and that for 1839 are the official documents transmitted annually to the Medical Board in accordance with the regulations of the service, by Dr. McLennan, Surgeon to the hospital.

power, constitute the most marked change in the character of the sick of the past year.

I have been in medical charge during nine out of the twelve months, and consequently shall only advert to the numbers treated in that period.

*Apoplexy.* One case fatal eight hours after admission, notwithstanding repeated general and topical blood letting; application of cold to the head; sinapisms to the extremities, and administration of drastic purgatives, &c. &c.

*Asthma.* Five cases of the spasmodic form of the disease treated successfully in the manner detailed in former reports.

*Cholera.* Fifteen admissions; five deaths. Of the ten cases successfully treated, only one was recent and afforded fair chance for much being done; of the others, four were admitted in a state of stupor and helplessness arising from affection of the brain, for them mercurializing the system and the external application of blisters were had recourse to; of the remainder this state supervened in three, and was similarly treated, and two others were cases, of long continuance of the symptoms of collapse. Wallace's aromatic mixture, laudanum, ammonia, pills of calomel and opium, blisters to the epigastre, and sinapisms to the extremities, with the external application of heat constituted the remedies employed. Of the fatal cases, one was moribund, and another died in less than two hours after admission. One, in a very old Christian occurred in nine hours and was attributable in some measure to diarrhœa which had been present for some time before the disease assailed him. One died in thirty-six hours who had rallied considerably, and at one time seemed in a fair way of recovery. Another, a girl ten years old admitted in an advanced stage rallied, but likewise sunk suddenly on the second day, and like the other without the superinvention of diarrhœa or any urgent symptom.

*Cutaneous Diseases.* Sixty-six admissions; two deaths. Herpes, eight; scabies, thirty-nine; varicella, four; ecthyma, three; lepra, ten; psoriasis, two. Regarding these I need only remark that the cases of varicella occurred in March and April, when variola was prevalent, and there seemed no reason to think, though they differed from those borne under that name in the returns in the absence of suppuration and of secondary fever, and in the earlier occurrence of

desiccation, that they were not of the same essential nature and produced by the same contagious influence as variola. The cases of ecthyma were of the acute form and were treated by general blood letting, antimonials, mercurial purgatives and cold applications. Of the fatal cases one of lepra occurred on the seventh day from weakness and old age, and the other sunk from hemorrhage from sores on the arm which resisted styptics of every sort.

*Cachexia.* Forty-nine admissions; thirty-four deaths; of these five occurred the day after admission, five on the second day, three on the third day, five on the fifth day, three on the ninth day; and of the others even, many were found on the roads in a hopeless state of destitution. For such cases, stimulants and when diarrhœa was present, sulphate of copper and opium constituted almost all that could be done. One had a cœcal fistula which on the post mortem examination was found not to be direct, but to have communicated with a cavity, apparently the cyst of an abscess in the muscular parietes of the abdomen. Several had purulent expectoration and might with propriety perhaps have been classed as Phthisis; many were cases reported to have arisen from the sequelæ of fever, and of those some died from ulceration of the intestines, but the greater number of this class recovered under the use of the sulphate of copper and opium two or three times daily in doses of from half a grain to one and a half grains of the former, to nearly an equal quantity of the latter. Two were cases of mercurial cachexia, and recovered under the administration of arrack, opium and ammonia.

*Diarrhœa.* Seventeen admissions; seven deaths. Of these two died on the second, one on the fifth, and one on the sixth day, Another admitted labouring under the local effects of a mercurial course, sunk from the irritation caused by gangrene of the cheeks and lips. *Treatment.* Sulphate of copper and opium and stimulants internally; and nitric acid, chloride of soda, and balsams &c. locally. Two others of long standing in old subjects became anasarcous before death.

Of the successful cases, four were treated by ipecacuanha in large doses, combined with opium, assafœtida and blue pill; two by opiates, absorbents and astringents, in different forms and combinations: three by sulphate of copper and opium, and two by the external repeated application of blisters, and the internal administration of bitter infusions.

*Dracunculus.* Cases of, for the most part admitted during the rains.

*Dropsical affections.* Twenty admissions; five deaths. Of these one occurred on the third, and another on the eighth day, and the three others at longer intervals, all having been reported to have had their origin in long continued fever, and all having been complicated with organic abdominal disease. In these cases arrack with spiritus æther: nitrici and other diuretics, constituted all that was done. Of those terminating successfully, eleven were cases of general anasarca and two of ascites — treated by general blood-letting, purging by elaterium, cremor tartar: in large qnantities daily, and combinations of squills, calomel or blue pill and digitalis at bed time. One case of ascitis, in an old Portugnese, which by these means had been almost cured, has since then retrograded, and he is now sinking from debility having entirely lost his appetite, and being supported by arrack and other stimulants.

*Dysentery.* Seventy-one admissions; twenty-six deaths. Of these two occurred on the day after admission, five on the second and seven on the fourth day; of the remainder two died in whom numerous hepatic abscesses were found. Two in whom ulceration of the colon had perforated the intestine, and in many of the others whose bodies were permitted to be examined, organic disease of long standing was disclosed. Sulphate of copper with opium was the medicine most generally given in these cases; its power in restraining purging is very great, and it consequently is in very general use for these lamentable cases of disease. Of the successful cases, twelve have been treated by topical blood-letting and ipecacuanha, &c., on Mr. Twining's plan, but without the interposition of purgatives; twelve by general and local blood-letting, blisters, and the induction of mercurial action; eighteen by the administration of sulphate of copper and opium; two of colonitis by general blood-letting and mercurial purgatives, and one by opium and liquor calcis. Recent cases in which the febrile symptoms were slight, were mostly treated on the first plan; those of longer standing in which there was much abdominal tenderness, and high febrile action mostly on the second and cases of long continued disease in which the intestinal discharges were copious and incessant, mostly on the third.

*Dislocations and sprains.* Three; one sprain of the ankle, one dislocation of the humerus into the axilla, and one of the carpal bones backwards.

*Fractures.* Fifteen admissions; three deaths. Of the latter all were cases of compound fracture of both bones of the leg. Two declined to have amputation performed and a third who consented, died three hours after its performance. In this case the tibia and fibula were completely comminuted from about six inches below the knee by the fall of a beam of wood. The accident occurred at six A. M. but the man was not brought to hospital till sunset, and was then in a state of exhaustion, from which opiates and stimulants failed to rouse him, and as a last resource, amputation was performed; yet though not a spoonful of blood was lost, he did not rally, but sunk at nine P. M. Of the successful cases, two were compound and three simple fractures of both bones of the leg. In one of these latter which was long disunited, amputation was performed at the urgent request of the patient. Three were fractures of the forearm: two of the ribs. One of the metacarpal bone of the middle finger in which amputation was performed, and one transverse of the patella.

*Fevers Remittent.* Sixty-three admissions; eleven deaths; of these one occurred on the second, two on the third, and three on the fifth day, two others admitted in a state of extreme debilty, died from effusion into the chest. Two who had been a long time ill from extensive ulceration of the intestines, and an emaciated old man from pulmonary disease attended by purulent expectoration. Of those who died soon after admission, two were supposed to have had hepatic abscess though their friends declined to permit the bodies to be examined. The treatment in those cases varied according to the circumstances in each but was necessarily almost entirely palliative.

Of the successful cases, in thirty-four, the head bore the onus of disease; in sixteen there was gastric and in two pulmonic complication. Blood-letting general and local, application of cold to the head, and at times of cold sponging to the surface generally; antimonium tartarizatum in liberal doses every second, third, or fourth hour, and occasional laxatives, with in the severe head cases, the induction of mercurial action, and in all as the symptoms of local excitement yielded or disappeared, quinine or bark, constituted the treatment employed.

*Fevers Intermittent.* Forty-nine admissions; of these twelve were tertian, thirty-seven quotidian. An emetic on admission, repeated doses of an emetico-purgative mixture on the following day; one large dose of quinine either followed by similar, or smaller to break the recurrence of the paroxysm, and thereafter bark in powder with mild

laxatives, constituted the treatment. Many of these cases were severe, calling for the use of blood-letting both general and local, and required quinine in large doses before their progress was arrested. Narcotine was tried in several with a good effect.

*Gonorrhœa.* Twenty-four admissions; in seven complicated with phymosis, in two with paraphymosis. Two cases required general blood-letting, antimonials, and mercurial fumigation.

*Hepatic affections.* Acute, thirteen admissions; two deaths. Chronic; eight admissions; three deaths. Abscess was the cause of death in all, which in two cases occurred on the second day, in two on the fourteenth, and in one on the seventeenth; two of those were Hindoos, two Mussulmans, and one a Christian. Of those cured, seven were cases of jaundice in which ol: tiglii as a purgative was found very useful. The others require no notice.

*Inflammations external.* Thirty-six admissions; two deaths. One from extensive abscess of the back on the sixth day, and another from cachexia, arising from general glandular disease. Of those cured, ten were cases of affection of the upper extremities; five of the lower; three of abscesses in the axilla; one of abscess about the scapula from a gunshot; one of abscess of the back. Three of inflamed testes; five of cynanche tonsillaris, and eight of buboes, &c.

*Inflammations cephalic.* One case fatal on the fourth day the patient having ailed for a week previously with what his friends described as fever. Leeches, cold to the head, drastic purgatives, and blisters to the nape, and chest, were the means employed. Inspection of the body disclosed traces of intense inflammation of the membranes of the brain, with the effusion of much serum within the skull, in the spinal cavity, and likewise in the lateral ventricles, which contained about eight ounces of a yellowish fluid.

*Inflammations thoracic.* Twenty-four admissions; six deaths of these one of pneumonia on the second day, two of bronchitis on the fourth day and two at later periods. In these, antimonium tartarizatum in large doses, and mercury internally with the view of affecting the system, together with blisters externally were the means had recourse to. One case of tracheal phthisis nine months ill, was treated by mercurials and anodynes but as was expected without averting the fatal issue. Of the cases sucessfully treated, six were

pneumonia and twelve bronchitis; antimonium tartarizatum with or without general blood-letting and blisters were the means employed.

*Inflammations abdominal.* Five admissions; two deaths; of these one from peritoneal inflammation arising from cystitis, admitted in a hopeless state of disease, and the other from gastritis of seven days standing, the sequela of fever. Of the successful cases one of gastritis and four of gastro-enteritis. Repeated topical blood-letting fomentations, mild laxatives and hydrarg: c. creta and hyosciamus with in two cases the application of blisters to the abdomen, constituted the treatment.

*Affections of the urinary organs.* Four admissions; one death in an old emaciated pensioner from strictures and catarrhus vesicæ. Cures, three cases of stricture.

*Mania.* Four admissions; one death from debility in an old subject who had frequently been in hospital before.

*Ophthalmic affections acute.* Eight to six of conjunctivitis cured by topical blood-letting, antimonials, and mercurializing the system, with the external application of ext: belladonnæ;

*Chronic.* Eleven admissions. One death from small pox with which the patient (affected with ulcer of the cornea) was attacked in hospital. Cures three of ulcer of the cornea, four of granulated eyelids, two of tarsal inflammation, and one of nebula.

*Phthisis pulmonalis.* Eleven admissions; nine deaths; one on the second, one on the fourth, two on the tenth, one on the fifteenth, one on the twenty-seventh day, and others at longer periods. Palliatives only employed of which the sulphate of copper and opium to restrain the colliquative purging were found the most efficacious.

*Rheumatism.* One-hundred and thirty-three admissions; six deaths. Regarding these I need only remark, that two died on the fifth, and two on the tenth day, and that of the others, one died from purging, and one from inanition having long lost all desire for food, and been supported by arrack and opiates; all six were very old men. Of these cured twenty-four were cases of acute and one-hundred and three of chronic disease. Of the latter a large proportion were in

addition to any other means that were used, extensively blistered by lunar caustic which has been found very useful in these cases. Extractum hyosciami (prepared in the Deccan) in combination with pulv: ipecacuan: has answered admirably as an anodyne diaphoretic. The only other circumstance requiring notice has been the very frequent occurrence of rheumatic, and catarrho-rheumatic ophthalmia. In these cases the attacks have been severe, not metastatic, and have invariably required the system to be affected by mercury before they have yielded. Blisters behind the ears, solution of caustic to the eyes and ext: belladonnæ to the eye-brows and eye-lids have been the external applications used. The acute cases of rheumatism have been cured by bleeding general and topical nauseants, colchicum and mercurials. The chronic on the system detailed in former reports.

*Spleen.* Four cases treated successfully in the manner already often mentioned.

*Syphilitic affections primary.* Sixty-five admissions; six deaths. Of these one on the eighth day was produced by an injudicious mercurial course in the bazar, the others were cases of subjects broken down by dissipation and disease; for these opiates, wine quinine and sarsaparilla &c., were given but most of them sank ultimately under diarrhœa and irritability of the stomach. *Secondary.* Seven admissions, one death from mercurial cachexia. Obstinate ulcerations about the toes and near the anus occurred in several of these cases. Treatment both of primary and secondary syphilis as already detailed in former reports.

*Small pox.* Thirteen admissions one death from the confluent form on the eighteenth day of the disease, and seventh day after admission. In this individual a great portion of the cuticle over the body was abraded; stimulants, diet and dressings merely used. Of the others the majority have been Portuguese, and have been affected in the months of May and June as has often before been reported.

*Ulcers.* Seventy-nine admissions; four deaths, one from sloughing of the pudenda from mercury on the fifteenth day after admission, one from blistering by marking nut oil in an old dropsical subject. One from ulceration about the pudenda of long standing in a phthisical patient, and one from extensive ulcerations over both lower extremities of two years duration the effect of syphilis and mercury.

This subject was much emaciated, and was worn down by diarrhœa and sleepless nights, which even the most powerful opiate did not remove.

Of the remainder, twenty-nine cases of simple ulcer, fourteen of irritable, sixteen of sloughing, sixteen of indolent: total seventy-five. These require no further remarks.

WOUNDS AND ACCIDENTS. One-hundred and fifty-nine admissions; nine deaths, being one third more than in any former year.

| Of these | Admitted. | Died. | | Admitted. | Died. |
|---|---|---|---|---|---|
| Injuries of the head.... | 20 | 4 | Contusions. | | |
| Penetrating wounds of | | | Of parties knocked | | |
| thorax..... | 4 | ,, | down and run over | | |
| of abdomen..... | 5 | 3 | by buggies and horses ..... | 31 | 1 |
| Punctured wounds of | | | Beaten by clubs &c... | 23 | ,, |
| extremities.... | 3 | | Falls from on horse- | | |
| Incised wounds of | | | back, and from masts, | | |
| trunk ..... | 4 | | trees, &c..... | 26 | ,, |
| extremities ..... | 15 | | From articles falling | | |
| | | | on them..... | 13 | ,, |
| Lacerated wounds of | | | | | |
| neck ..... | 1 | | | | |
| axilla ..... | 1 | | | | |
| trunk ..... | 3 | | | | |
| extremities .... | 10 | 1 | | | |

*Injuries of the head.* All the fatal cases were instances of fractures of the base of the skull, in three produced by falls while in a state of drunkenness, and in a fourth from being knocked over by a horse running at speed. In one, death occurred in two, in another in four, in a third in thirteen, and in the fourth in fourteen hours. In none was there any great displacement of the bones, and in all the fractured parts were the same — the parietal and petrous portions of the temporal bones. Hemorrhage from the ears occurred in all, and from the nose likewise in two of the cases. Immense effusion of blood both between the dura mater and skull, and between the dura and pia mater, had occurred in all. In three of the cases there was likewise much engorgement of the vessels of the head generally.

A fifth case of injury of the head in a Parsee terminated fatally soon after the man's removal from hospital. In this instance the fractures were in the upper part of the cranium, the result of blows by a club and the man lived for about forty-eight hours.

Of the successful cases, four were instances of concussion of the brain and twelve of lacerated wounds of the scalp; for these, general and local blood-letting, cold applications to the head and mercurial and saline purgatives and antimonials were employed,

*Penetrating wounds of the thorax.* Four, all occurring in Portuguese from stabs by daggers or knives in drunken quarrels; active depletory measures saved all.

*Penetrating wounds of abdomen.* Five admissions; three deaths, of these two affected the chest likewise, and in both the stomach and diaphragm were perforated; death arose from internal hemorrhage. The third case too, sunk from hemorrhage, in him there was no wound of the chest, but considerable protrusion of the omentum and perforation of several folds of the small intestines.

In the two successful cases there was great protrusion of the omentum, and the inflammatory symptoms ran high, but were combated by profuse bleeding both general and local.

The fatal case of lacerated wound of the extremities arose from tetanus, and that borne "contusion" was the result of being knocked over by a buggy; death occurred in twenty-six hours after admission, and it was then ascertained that the individual must have been long suffering from abdominal disease, for the whole contents of the belly were found massed together by inflammation, while much effusion of pus and serum had taken place into its cavity; the colon internally was likewise ulcerated through its whole extent. Of the lacerated wounds and contusions many were severe, but all did well under strict antiphlogistic treatment.

OTHER DISEASES. One hundred admissions; nine deaths. Of these have been

| | Admitted. | Died. | | Admitted. | Died. |
|---|---|---|---|---|---|
| Scurvy | 12 | 1 | Debility | 2 | ,, |
| Palsy | 17 | 3 | Diseased elbow joint | 1 | ,, |
| Tetanus | 5 | 3 | Dyspepsia | 6 | ,, |
| Ptyalism | 1 | 1 | Fistula in perineo | 1 | ,, |
| Poisoning | 12 | 1 | Hemorrhoids | 3 | ,, |
| Drunkenness | 4 | ,, | Hydrocele | 2 | ,, |
| Scrofula | 6 | ,, | Hemeralopia | 2 | ,, |
| Colica | 3 | ,, | Ranula | 2 | ,, |
| Caries of jaw | 1 | ,, | Polypus of the ear | 1 | ,, |
| Contraction of joints | 2 | ,, | | | |
| Contraction of mouth | 1 | ,, | | 100 | 9 |
| Constipation | 17 | ,, | | | |

*Scurvy.* Twelve admissions; one death on the fifteenth day in a very debilitated subject. In this case, anasarcous swelling of the lower extremities was present to an unusual extent, and required the frequent evacuation of the serum by punctures. The other cases have been severe, and have in most been attended by a very obstinate itch. Treatment as often detailed in former reports; opiates necessary to check the diarrhœa, and to procure rest, have very often brought on ptyalism.

*Palsy.* Seventeen admissions; three deaths; all cases of hemiplegia. One occurring on the second and another on the eight day; in the latter case repeated topical blood-letting blisters to the spine and drastic purgatives employed; the third case sunk from old age and dropsy.

Of the others, six were cases of hemiplegia, four of paraplegia, and four of partial paralysis. The administration of nux vomica has answered better in the past, than in former years, particularly in cases of paraplegia and in those of hemiplegia in which the motor nerves only were affected. It has been given in large doses, but it has often been found necessary to interrupt its administration for a time in conseqence of the painful muscular contractions that have been excited. These have been complained of so much by several patients that it has been found necessary in these cases to desist from its use altogether; but it has in seven patients produced perfect restoration of the power of the affected parts.

*Tetanus.* Five admissions; three deaths. One a woman on the day after being brought to the hospital; in her case, the disease followed attempts to produce abortion. Another, in a man fifteen hours after admission; dracunculus in the foot was the cause in his case. A third found lying on the road on the fifth day after the commencement of the disease lived for five days, and seemed at one time much better, and as if he were surmounting the attack; a sudden recurrence of spasms however cut him off. In all these cases, and in the two which were cured, repeated cupping at the nape, and along the spine, blisters to the same parts, purgatives, mercury, and opium in large and frequently repeated doses were the means employed. In one of the successful cases, a woman with lacerated wound of the scalp who was five weeks in hospital, it was found for a long time impossible to diminish the opiate, as a threatening of return of the spasms was the invariable consequence. Salivation was produced in this case, and in the other which was cured.

*Ptyalism.* One case from mercury brought from the bazar, death produced by sloughing of the mouth on the third day.

*Poisoning.* Twelve admissions; one death, all produced it is believed by datura, and all followed by the same train of symptoms, delirium, restlessness, incoherent muttering, grasping at spectra, and great muscular debility. This latter in the mildest cases always caused staggering and very often perfect inability to stand or sit. With these symptoms were generally combined great dilatation of the pupils, much heat of head, and frequently of body generally, and quick full pulse. They for the most part terminated in profound sleep. The stomach-pump was used in several cases, and ipecacuan combined with carbonate of ammonia was found to be the most certain and efficacious emetic. Blood-letting was not had recourse to, but the affusion of a column of cold water upon the head from a considerable height was never neglected. The fatal case was admitted in a moribund state.

*Drunkenness.* Four cases similarly treated.

*Scrofula.* The long continued internal use of hydriodate of potass, and tinct: iodine was productive of great benefit in several obstinate and old cases of great glandular enlargement about the neck.

*Contraction of the mouth.* From mercury; in this case, the mouth would not admit a common sized quill. The cartilaginous ring surrounding this orifice was removed, and the opening made of such size as to allow solid food to be taken.

*Debility.* Two cases from excessive blood-letting. *Hydrocele.* Two cases cured by iodine injections. The other diseases do not call for any remark.

NUMBER OF SICK.

| | |
|---|---|
| Remained 31st December 1837 | 72 |
| Admitted in 1838 | 1439 |
| Discharged | 1203 |
| Died in Hospital | 217 |
| Remaining 31st December 1838 | 91 |
| Average daily number of Sick for the year | 82$\frac{2}{7}$ |
| Died without receiving medical treatment | 8 |

BOMBAY, 15th January, 1839.

## Article IV.

### *Catalogue of Articles of the Materia Medica of Europe and India, found at Aurungabad and in its vicinity.* By A. Walker, M. D.,

Presented March, 1840.

Notwithstanding, the works of Ainslie and Royle, together with the papers published from time to time in the medical journals of this country, have laid open to the profession almost all that is really valuable of the materia medica of India — something yet remains to be done, that the localities of the different remedies may be known and that some classification be adopted with respect to them. The difficulty of transport in this country and above all the extreme liability that vegetable substances have to spoil, whether from decomposition or the inroads of insects, make the first important; while the loose information often given by natives and their necessary ignorance of medical science, call for some arrangement whereby the efficacy of their remedies may be tested.

In the following pages an attempt is made to arrange in accordance with the natural system of Botany, as lately laid down by Dr. Lindley, * the medical plants of a portion of the peninsula of India usually esteemed the most barren and least productive. To describe the country about Aurungabad in all its relations to soil, climate, geological structure and physical geography, would be out of place here. Suffice it to say, the soil is of two descriptions, one the regur or cotton soil extending from Adjuntah to Rozah, on which are grown the garden produce mentioned below; the other or stiff dry soil composed of the debris of the trap rocks, varied according to the source from whence it may have been derived, being harder and drier, with lime when an amygdaloid has been decomposed, simpler and less rigid where a rock of indurated clay has been wasted.

Tabular trap hills surround Aurungabad on three sides, and a plentiful supply of water is thence obtained to irrigate at all seasons

* Natural System. 2d Edition.

the low lying gardens of the city; these hills rise to the height of from three to five hundred feet above the plain which is itself fifteen hundred feet above the level of the sea. A belt of bluff black rock usually occurs half way up the sides of these heights; on each side of which, trees of a stunted growth and under-jungle flourish. The few full grown trees are found on the rich black soil, or in and about the well watered grounds of the city.

The climate is chiefly characterized by its extreme dryness for at least eight months of the year, from October till June, when the rains, often partial, begin to fall; the average of the last years has been only twenty-two inches. A fortnight after the last shower has fallen, all verdure disappears giving place to the brown dried up vegetation of the plain or the black charred coating of the hills from the burning of the grass.

The stately tree of the jungle is no where to be met with in these parts, nor is the rich luxuriance of tropical vegetation often seen; yet the following catalogue will shew, that the Capital of the Deccan and its precincts are sufficiently rich in what appertains more particularly to our subject — the articles of the materia medica, whether of Europe or India.

The articles marked thus (*) are mentioned by Dr. Ainslie,* and to that work reference may be made for a description of their properties; for generally speaking, I have avoided as much as I could, repeating what has been detailed in a work so well known. The Mahratta names of the substances are taken partly from Colonel Sykes' statistics of the Deccan, partly from information derived on the spot.

The usual division according to the three natural kingdoms has been adopted.

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## Animal Kingdom.

Certain animal substances have from the earliest periods been esteemed powerful remedies; the story of the cure of Tobit's blindness in the Apocrypha, being sufficient to shew how soon the notion of their efficacy was prevalent. A confused idea, that dead animal matter when taken into the stomach had the power of imparting to the living body, qualities inherent in itself while alive, appears to have been the source of a multitude of vagaries on this subject.

* Materia Medica of India.

Doubtless a few of them have a determinate action on the living body, but in most cases they will be found to act indirectly through confidence or disgust, and one can easily credit in the efficacy of an electuary of cockroaches as a diaphoretic in cases of lock-jaw, among the eastern Africans.* When every pharmacopæia in Europe within the period of a life time, teemed with articles of this nature, and when "your toad, your crow, your dragon, and your panther," were held in esteem as medicines at the time that Sydenham wrote, it can be a matter of no surprise to find them in abundance in the materia medica of this country. To enumerate many of them would be but to make out a list of the ingredients of Hecate's cauldron, truly a work of supererogation, when we have Shakespeare's spirited inventory of its contents.

By discovering to us the proximate principles of animal matter. Chemistry has rendered obsolete, as medicines, the greater proportion of these substances. Correcter views of physiology too, have farther contracted their number and abated their importance. †

* *Ovum.* The oil of the egg after being separated, is rubbed in by the natives in cases of stiff joints from gout or rheumatism.

* *Mel.* Three species of bees according to Colonel Sykes, afford wax and honey in the Deccan.

* *Antelope cervicapra.* (Cuvier). The antelope is found on the plains near to this; the chemical properties of its horns differ in no respect from those of the stag, which still maintain a place in the pharmacopæias of London and Edinburgh.

* *Meloe Cichorei.*

* *Meloe Trianthema.* Both these species of meloe are found in this neighbourhood during the rains and particularly at their close; the former on the flower of the *tourace* (*Cucumis Acutangulus*) the latter on the ear of the Indian corn. On the leaves of the cucurbitaceous plants cultivated in the dried up nullahs and rivulets, a species of beetle nearly allied to the meloe is found, but its vesicatory powers are feeble and uncertain.

* Captain Owen's Narrative.

† As among the ancient Greeks, animal substances are principal ingredients in love potions, charms and other superstitious inventions; and a Jones would find on these grounds, ample reason to extend the parallel of the gods of the two countries to many of their prevalent rites and customs. The chief venders of such nostrums are a set of peripatetic quacks who make their appearance periodically, and whose impudence and effrontery nothing can match save the credulity of their dupes.

6. * *Hirudo Medicinalis.* The leech is said to abound in jheels, nullahs and tanks, all over India; this is one of those sweeping assertions that in reference to this part of the country must be taken with some reservation, both according to my own observation and to the fact, that leech-breeding is pursued as a profitable vocation throughout the country, a circumstance not likely to happen if the animal was so rife; the method of breeding is similar to that detailed by Dr. A. Gibson. *

## Mineral Kingdom.

The geological formation here though rich enough in earthy minerals, is deficient in metallic with the exception of iron which is well known to constitute a constant, though ever varying ingredient of volcanic rocks. The following productions and two of these factitious, are the only articles of the materia medica belonging to this kingdom, that I have found in the western part of the Nizam's territory.

* *Potassæ Nitras — Shorah.* Saltpetre exists, or rather, is produced in various parts of the country about Aurungabad, and is separated from the soil at a village called Chandah on the Ahmednuggur road, but to no great extent. For the production of saltpetre the presence of some mineral containing potash as felspar, zeolite or mica, to furnish the alkali, and carbonate of lime together with an open, but not too free communication with dry atmospheric air, are requisite. This will explain an apparently singular circumstance which occurs at this station, with regard to the different qualities of the water of the wells, some being brackish and some sweet within a very short space of each other and at the same depth from the surface. It is well known to geologists that the different species of trap rock are found constantly passing abruptly into each other; that the simple indurated clay becomes a porphyry and the porphyry an amygdaloid within a yard. Now, if in either of the two kinds of rock last mentioned, both of which occur where the cantonment stands, carbonate of lime should occur either amorphous or crystallized, all the circumstances required for the production of saltpetre are present, and a brackish water is the necessary result of sinking a well (the potash being furnished by the felspar of the porphyry, and by the felspar, zeolite and mica, of the amygdaloid.) This explanation tallies with the opinion of the natives on the subject, who always draw an unfa-

vourable augury of the qualities of the water, when in sinking a well, they come upon crystallized carbonate of lime. As a corallary to this, it is evident that boring in the simple rock offers the greatest probability of a good water.

* *Potassæ Carbonas.* Carbonate of potass is produced by burning several kinds of vegetable substances, but chiefly the stems of the plantain. (*Musa Sapientum*) and collecting the ashes. As formerly among ourselves, the natives attach different qualities to the salt according to the vegetable from which it is derived, the ashes of the plantain and horse-radish tree being deemed as different as were of old, the salts of the broom and willow. In the preparation of some of their mineral remedies as Ruscapoor (an impure kind of calomel,) &c. the native pharmacy which is akin to that of the Chinese, though rude and needlessly expensive is not wholly unsuccessful. The propensity however, that the native doctors have to give Mithridates is such that out of the sheer necessity of contracting their bulk, they are obliged to subject many of their vegetable remedies to the action of fire, little imagining what a caput mortuum remains in their crucibles. From this cause, carbonate of potass is a much more frequent medicine among them than they reck of.

* *Sodæ Murias.* The salt soil of the Berar valley, as indicated by the water of the wells, extends sixty-five miles in length from Oomrowtee to Punchgowen, and thirty-five miles in breadth from Kapoostulnee to Akolah. A waving line drawn through these places, will shew its extent, and include an irregular ellipse of which the river Poornah forms the conjugate diameter. Throughout this region, the wells are more or less impregnated with salt, and the soil barren or fertile, according to the quantity of the mineral with which it may abound; producing in some parts luxuriant crops, while in others the hardiest weed cannot flourish. In such situations as the latter, the mineral is in sufficient quantity to repay the labour of its manufacture, and here accordingly we find it prepared. After the rains, propitiatory sacrifices being first offered to the gods and the genii loci, a well from eighty to a hundred feet is sunk; the water from which, is drawn up and allowed to evaporate in reservoirs prepared for its reception.

So little care is bestowed by the manufacturers, that the article which they prepare, besides containing proportions of muriate of lime and other deliquescent salts, so abounds with earthy matter as to constitute its moiety. The consequence of which is, that during the rains, the salt unless kept carefully dry, runs off in a fluid state, leaving a mass of tasteless mud behind; the Scriptural allusion to salt having lost its savour would appear to have this fact for its point. The

Jews, an inland people, and at one time totally excluded from the importation of bay-salt by the barbarous policy of one of the Antiochi, would naturally turn to the salt soil and lakes of their own country to supply themselves with this necessary of life, and would produce it as impure as the koonbees of Berar.

* *Sodæ Carbonas.* This salt the natron of ancient naturalists is found in the salt soil of Berar and also at the lake of Loonar, the margins of which are encrusted with it in the hot season. Its use in the arts and in pharmacy is well known. It is also employed as a condiment by the poorer classes in lieu of common salt, a similar use to which it is put by the Indians of the llanos of South America, as we are told by Humboldt.

* *Ammoniæ Murias — Nowshadur.* Found in brick kilns after the bricks are burnt.

* *Calcis Sulphas — Selenite.* Found in the salt soil of Berar, when powdered it is applied to foul ulcers, and is used as a desiccative in cases of violent perspiration.

* *Calcis Carbonas — Chuna.* Found abundantly in the trap rocks, in various states of aggregation from a soft friable earth to the crystallized carbonate, it forms also often an ingredient of the soil. There is a species of limestone seen in the nullahs, in boulders near Ellichpoor, so hard and close grained as to approach marble, indeed if the common rule that all limestone that will take a polish merits the name of marble, it is in fact so; for more than one of the figures in the Jain temples at Mookhtagerry, in the vicinity of Ellichpoor, are clearly cut out of this stone.

Slaked lime formedinto a paste, is used by the natives as an application in bruises.

## Vegetable Kingdom.

"The plants, flowers and roots, of this country, (says the author of the Ayeen Akhberry) that are used for food and applied to medicinal purposes are innumerable; it is said if you take a leaf from every tree they will amount to six maunds." This statement although it may require abatement to rescue it from the imputation of a mere eastern hyperbole, conveys no inapt idea of the varied profusion of the Indian vegetable kingdom, viewed solely in its relation to the economical purposes of diet and medicine. With regard to the former it is difficult to say, which to admire most — the locust appetite of the people of India for every green thing or the "dura ilia" that can turn

to account the bitterest and most nauseous herbs. Well might the disciple of Loyala, exclaim "I thought that gall had been confined to the animal creation, but I find that the vegetables of this country possess it in abundance."*

The following catalogue is confined to the medicinal plants growing in the neighbourhood of the cantonment and city of Aurungabad. Unless particularly mentioned, they are to be understood as being found within a circuit of twelve miles of these places and none are inserted that have not been examined and identified. By ransacking the shops of the punsaries and attars many more articles might have been added to the list; but the design being to point out the productions of a particular part of the country as connected with the medical art, and not to furnish a Hindoo materia medica — the indigenous or cultivated plants have been alone noted.

In the descriptions of the powers ascribed to the different remedies, attention has been paid rather to popular information than to the opinion of the professed Hakeem or Beyd. From the former source, although we must be prepared for much error and absurdity; we have at least simplicity and an absence of a disposition to impose. We cannot expect either the one or the other, from the latter † with whom a simple is a despicable thing, and whose position and interest must ever lead to habits of falsification and deception.

We are told by Pennant that the bear is reckoned by the Kamskatkhans, their great master in physic and surgery, and that they carefully observe the herbs he has recourse to when sick or wounded. We have a nobler animal than the bear to observe, yet the hint the Kamskatkhans give us, is worthy of attention. "It‡ were better (says Sir Wm. Jones) "to find certain accounts of a single leaf and berry than to be acquainted with the most elaborate compounds, unless they too, have been proved by a multitude of successful experiments."

RANUNCULACEÆ. *Clematis Gouriana.* (Roxb). Employed by the natives as a vesicatory, for which its congeners are used all over Europe. It is possessed also of purgative properties.§ Ratier regrets

* Lettres Edifiantes et curieuses, Tom. xi.

† This as far as my experience goes, which has been limited to the western portion of the Deccan, a part of India notoriously rude and ignorant.

‡ Asiatic trans. Sir Wm. Jones, 2d annual address.

§ Dictionnarie de Medicine et Chirurgie.

The following has been found to be an excellent application in ophthalmia take a masha (grs. xv.) of opium, one masha of resotta (a resin-colophony ?) and five grains of alum; pound and mix the ingredients in water to the consis-

that the clematis should have fallen into such neglect as a medicine, and attributes it to the undue praises of Stoerk.

*Delphinium Staphysagria.* (Lin). Cultivated in the gardens of Mussulmans, solely for the beauty of its flowers; it is not used as a medicine by the natives.

*Nigella Sativa.* (Roxb). Used by the ancient Greeks in uterine affections.

PAPAVERACEÆ. *Papaver Rhœas.* (Lin). In gardens as a flower; medicinal properties unknown to the natives.

*Papaver Somniferum.* (Willd). The poppy is cultivated in the districts about Aurungabad. The opium produced is of an inferior quality and sells in the bazar for one half the price of Malwah. The young plants of the poppy are eaten as greens by the natives and are not found to possess any narcotic property: the price of Malwah opium in the Aurungabad bazar is sixteen rupees a seer.

The external application of opium in some form to topical inflammations, is a favourite native practice and often a successful one.

* *Argemone Mexicana.* (Willd). The yellow juice used as an application in sore backs of horses. In the West Indies the juice is inspissated and hardened and called Jamaica Gamboge.

FUMARIACEÆ. *Fumaria Indica.* In gardens; a slight bitter.

NYMPHÆACEÆ. * *Nymphœa Cyanea.* (Roxb).

NELUMBIACEÆ. * *Nelumbium Speciosum.* (Willd). This plant is cultivated in China for its roots, which are there, and in this country, used as articles of food.

Pythagoras is supposed to have prohibited his disciples from eating them from a tender regard to their stomachs, as the faba Egyptiaca is considered constipating and astringent. According to Pallas a cosmetic is prepared from the flowers on the banks of the Wolga.

MAGNOLIACEÆ. * *Michelia Champacca.* — *Champa.*
Root said to be used as a purgative by the natives.

ANNONACEÆ. * *Annona Squamosa.* (Willd). *Seetaphul.*
* *Annona Reticulata.* (Willd). *Ramphul.*

tency of thin jelly, hold this over the flame of a candle in a silver spoon till it boils; when cool, plaster this all over the eye-lids and round the eye, taking care that none of it gets into the eye; wash the eyes in the morning with warm milk and water. Two or three applications are generally sufficient

UMBELLIFERÆ. With the exception of the hydrocotyle, all these umbelliferous plants are objects of cultivation. The high caste Brahmins have a strange and whimsical objection to eating carrots; they say the inner part of the root resembles bone so closely and the outerflesh, that they regard it as a kind of animal food.

* *Hydrocotyle Asiatica.* (Willd). * *Cuminum Cyminum.* (Willd). * *Apium Graveolens.* (Willd). * *Daucus Carota-* (Willd). *Gajur.* * *Anethum Sowa.* (Roxb).

The leaves of the dill are often mixed with other greens particularly the *palak* (*Beta Bengalensis*) as a corrective.

* *Ligusticum Ajowan.* (Fleming). *Owah.*

VITACEÆ. The fruit of several species of *cissus* and also that of the *vitis indica*, are eaten by the Bheels and other hill people who consider them demulcent.

*Cissus Vitiginea.* (Lin).

The decoction of the root with aromatics is given internally in bruises and other injuries.

* *Cissus Quadrangularis.* (Willd).

*Vitis Indica.* (Willd). *Ran drachsh.*

The root of the *vitis indica* after being sliced and dried is along with one half its quantity of rhubarb, given in the form of decoction in liver complaints and leprosy. This is a Portuguese remedy and among a certain class of natives an highly valued one. I have never been able to find out what particular effect on the body this decoction has, save that it is slightly purgative, a quality owing in all probability to the rhubarb. The taste of the root is at first slightly astringent but afterwards gives that peculiar sensation to the fauces which is experienced from croton oil and some arums in their raw state.

I have been informed that the plant is put to the same use by the Portuguese as the whortlebery *(arbutus uva ursi)*, this may happen from the fruit of both being somewhat similar.

* *Vitis Vinifera.* (Lin). Grape *(Drachsh).*

The vine is extensively cultivated and its produce is thought to excel the grapes of any other part of India.

* Colonel Sykes mentions seven varieties of grape as being cultivated and enumerates six by name, of these, four are grown here, viz.

1st. *Hubshee.* A long black grape approaching nearest to the

* Statistics of the Deccan.

black * Hamburgh of English gardens, the leaf of the vine producing this variety is small and deeply lobed.

2*d. Sahibee.* A long white grape with an astringent skin; leaf of vine broader and of a lighter green than the last.

These two varieties are the most esteemed being sold at the gardens for rupees one and a half a seer at the beginning of the season, and seldom to be procured for less than half a rupee a seer, a price wholly disproportioned to the expense of their cultivation and to be accounted for only by the high tax levied by Government on their production; a very good raisin is obtainable from the first variety.

3*d. Fakhric.* Sweet water grape; leaf of the vine shallow lobed and broad. When the crop is plentiful, so much as twenty-five seers are procurable for one rupee, it is cultivated extensively throughout the villages, whereas the *Hubshee* and *Sahibee* are only found in the gardens of the city or at Dowlatabad.

4*th. Bokhric or Ahbee.* A round flesh coloured sour grape; every where to be met with. Leaf differs little from that of the preceding,

* Loudens Cyclopædia of gardening.

The vines are propagated by cuttings, when first put into the ground they are carefully protected from the dry chill easterly winds by a low fence; they usually bear fruit in the third year; the vines are planted in squares twelve feet apart and are supported by fast growing trees such as the Aeschynomene grandiflora, Erythrina Indica and Jatropha curcas, round the branches of which their tendrils twine.

In the hot season after the grapes have been gathered, they are pruned and manure composed of cowdung ashes, is applied to their roots; they are occasionally watered during the whole period of the hot season and in the rains they are kept from vegetating by constant cutting; at the termination they are permitted to shoot and much trouble is incurred to prevent a small species of beetle from consuming the tender shoots and leaves; this is done by smoking and shaking the vines twice a day.

The grapes ripen at various periods according to the season, but are generally most abundant about the middle of February. The advice of Virgil. "Neve tibi and solem vergant veneta cadentem," is strictly adhered to, all the gardens being to the end of the fortress of Dowlatabad whose shadow protects the trees from the baneful influence of the setting sun. The soil of the gardens is light containing according to a rough estimate made from a specimen of soil taken from one of the principal gardens thirteen per cent of lime.

The question of wine-making in this country has often been discussed, and occasionally (as at Kunhar a few years ago) put to the test of experiment. The superior flavour and quantity of saccharine matter in the grapes would appear to favour the production of a rich wine, but the fact that no vinous fermentation can go on in what may be called a normal manner above 65 Fahr. must ever offer a serious if not an insuperable obstacle to wine-making in India.

except that the petiole and veins are of a wine red colour, a circumstance attributable to the action of the air on its acid juice. A good vinegar is prepared from this grape.

COMBRETACEÆ. * *Terminalia Bilerica.* (Roxb). *Beharah.*

Infusion of the bark and fruit used as a gargle in inflammations of the fauces.

* *Terminalia Chebula.* (Willd). *Hillah.*

* *Terminalia Glabra.* (Wight and Arnott). *Arjunah.*

The pounded bark is used by the Bheels as an application in wounds; an extract from it called Arjoon Sardaollah, is an excellent application in cases of sore-back of horses, camels, &c.

MYRTACEÆ. * *Punica Granatum.* (Lin). *Dahlim.*

Bark of the tree and rind of fruit regarded by the Hippocratists as the best of astringents. The efficacy of the bark of the root in expelling tape-worm has been long established by experience in Europe.

* *Myrtus Communis.* (Lin).

In gardens. Astringent; a wine was prepared by the ancient Greeks from its * fruit.

*Engenia Jambolana* (Lamarck). *Jamb.*

CUCURBITACEÆ. * *Cucumis Colocynthis.* (Willd). *Goleeah Indrawen.*

The colocynth plant is found abundantly here; it delights in an arid soil and grows generally where there is loose soil.

*Lagenaria vulgaris* (De Candolle). *Kurwa boplah.*

The mucilaginous seeds of this and several other species of this order, are employed in infusion in ardor urinæ, &c. as demulcent.

A property also in common to many species, is the purgative quality of the pulp near the rind. Although partial to gourds, cucumbers, melons, &c. the natives are strongly impressed with the belief of their unwholesome nature and rarely fail to attribute any severe sickness to an abundant crop of them.†

* *Bryonia Scabrella* (Roxb). *Scabra* of Ainslie.

* *Bryonia Filiformis* (Roxb).

Seeds given to children along with aromatics in heat of body.

*Bryonia Glabra.* (Roxb).

The fleshy root of this plant is looked upon in this part of India

* Dierbach's materia medica of Hippocrates.

† McIntosh's account of the Mahdeo Kolies. Madr. Gateway. Journal.

as a powerful remedy in snake bites. From its Teloogoo name of *naga donda*, Roxburgh suspected as much; when used, a portion of the root is applied to the part bitten and a small piece is eaten.

It would be a bold assertion wholly to deny the efficacy of certain substances in alleviating the pain and counteracting the effect of a snake bite, but the notorious fact of the deep dread entertained by the natives of India of the bite of every reptile, whether venomous or not, must render us very sceptical about a number of remedies believed by them to be efficacious in such cases; for there is nothing that approaches so near in its effects on the animal economy to a snake bite as the passion of fear.

CACTACEÆ. * *Cactus Indicus* (Lin.) *Opuntia Delenii* (Hawk.)

Fruit used by the natives in spleen and applied in cases of scorpion bites.

The plant itself after being carefully denuded of its outward membrane and thorns, is used as a poultice in guinea worm, all over the Deccan by the natives. The specific powers ascribed to this substance in extracting the worm are not to be credited. A very good emollient application it very probably is, but no one acquainted with the disease could ascribe any other property to such a remedy.

CRUCIFERÆ. * *Lepidium Sativum* (Lin.) — *Hulwee.*

* Used by the ancient Greeks in diseases of the breast.

*Sinapis Alba* (Lin) *Mohriah.* *Sinapis Nigra* (Lin.)

Both species cultivated for the sake of the oil.

*Raphanus Sativus* (Lin).

CAPPARIDACEÆ. * *Cleome Pentaphylla* (Willd) *Selwin.*

A very common remedy among the natives who express its juice, and pour it into the ear in cases of ear-ache; in head-ache they rub it on the forehead, the leaves are eaten also as greens and the seeds used in veterinary medicine.

* *Cleome viscosa.* (Willd.)

The seeds of this species are employed in the following manner for the cure of piles. A hole is dug in the earth, and into it are put a gurrah containing ignited charcoal and on the top of this another gurrah containing the seeds of the plant. By this means a smoke arises from the seeds, advantage of which is taken by the patient;

* Dierbach.

this rough mode of fumigating is resorted to in other cases and with different remedies, such as the Madar &c.

*Cleome Monophylla* (Willd.).

Used for the same purposes as the *Cleome pentaphylla.*

* *Strœmeria tetrandra*, (Roxb). *Cleome.*

*Fruticosa*, (Lin).

The whole plant after being cut into slips with the leaves and fruit on, is subjected to a species of distillation common in India for what is deemed the extraction and concentration of the powers of a vegetable, by which, (whatever may be its intrinsic virtues) an empyreumatic oil or liquor must be the uniform result; a hole is dug in the ground, an earthen vessel placed undermost is covered at its mouth by another of the same kind with its bottom pierced by holes, into which the substance to be operated on is placed. Fire is placed in a flat dish on the superior vessel and a liquor or an oil descends to the lower one. Such a process, it is almost unnecessary to add is sufficient to ruin the inherent qualities of any plant. In this case a liquor is generated, possessing not one characteristic of an oil; well carbonised doubtless and having all the stimulant properties of pyroligneous acid. The liquor is used in rheumatism with friction.

MORINGACEÆ. * *Hyperanthera moringa* (Willd.) *Schogah.*

The *ben* nuts once so celebrated in Europe are the produce of this tree; from them an oil is derived which resists rancidity; two and a half pounds yield an ounce of the oil. The ancient Greeks employed the capsules as * pessaries.

The root appears to contain the stimulating principles of the horse-radish and might be used for the same purpose in medicine.

PAPAYACEÆ. * *Carica Papaya.— Papaw tree. Phopy.*

FLACOURTIACEÆ. *Flacourtia Sepiaria.*

Fruit rather a cooling article of diet than a medicine.

SAPINDACEÆ. * *Sapindus Detergens.* (Willd). *Sapindus Emarginatus.* (Roxb.) *Areeta.*

Both soap nut trees. The frothy infusion is given in cases of poisoning to envelope the poisonous substance, and prevent its action on the coats of the stomach previous to its being ejected.

* *Cardiospermum Halicacabum.* (Willd). Seeds thought aphro-

* Dierbaeh.

disiac. *Scytalia Litchi.* (Roxb). The litchi grows well at Aurungabad and produces a fruit which is palatable enough.

In China we are told that the seeds of the Litchi toasted and powdered are swallowed in the morning fasting for nephritic pains and gravel.*

LINACEÆ. * *Linum Usitatisimum* (Willd). Sown in this neighbourhood as in Britain, on the skirts of grain fields.

STERCULIACÆ. * *Helicteres isora.* (Willd).

* *Sterculia Fætida* (Willd). *Kydia Calycina.* (Roxb). Bark mucilaginous, used in cutaneous diseases.

* *Bombax pentandrum.* In gardens.

* *Bombaxi Heptaphyllum* (Willd). *Adansonia Digitata.* (Willd).

Several specimens of the far famed Baobab tree grow in this vicinity, the acid fruit is taken by the natives as a cooling diet.

The bark of this tree which yields a considerable quantity of mucilage, is held in great esteem by the natives of Senegal, who deem it prophylactic, and there is scarcely an article of food they take without first adding to it a certain quantity of the powdered bark.

MALVACEÆ. The plants of this and the preceding family are all more or less mucilaginous and are on that account, extensively employed by the natives in affections of the mucous membrane. Regarded as accessories of no great power by us, they are esteemed by them, principal and powerful remedies; there is scarcely a plant or a shrub of the whole tribe they do not use as a medicine in some shape or other. The following are those in general use.

*Malva Mauritiana.* (Willd). An ornamental plant in gardens. *Althæa Rosea.* (Willd). *Hibiscus Populnoides.* (Roxb). The yellow juice used in ring worm. * *Hibiscus Rosa Sinensis.* (Willd). Unexpanded petals are given in cases of strangury. *Hibiscus Longifolius.* (Willd). Infusion of root in diarrhæa and gonorrhœa. *Hibiscus Cannabinus.* (Willd). *Umbarrah.* A Cataplasm of the leaves is applied in cases of scald-head.

*Sida Humilis.* (Roxb). Used in fomentation. *Sida Alnifolia* (Willd).

A handful of leaves pounded up with two ounces of sugar is eaten morning and evening in cases of impotency.

*Sida Cordifolia.* (Willd). This is a very common application

among the natives in bruises, ulcers, and almost every other affection of the surface, it is no unusual thing to hear the praises of the "country marsh mallow" among our own country men. Farther than being a good emollient it would appear to possess no particular virtue. In the days, not altogether yet gone by, when every simple abrasion of the surface was tortured into an ulcer by the application of some rancid and stimulating ointment acting much worse than any foreign body, it is not to be wondered at, that a simple remedy like this should have come into vogue.

* *Sida Asiatica.* (Willd). * *Sida Indica* (Willd).

TILIACEÆ. *Corchorus decemangularis.* (Willd).

Infusion of leaves drank twice a day in cases of gonorrhœa.

* *Grewia Asiatica.* (Willd). Cultivated in gardens for the sake of its fruit from which an excellent sherbet is made.

MELIACEÆ. *Melia Azedirach.*

* *Melia Azedirackta.*

CEDRELACEÆ. * *Cedrela Toona.* (Willd). *Toon.*

This tree is held sacred by the Hindoos, it's powdered bark and wood have been successfully employed by European practitioners as a febrifuge.

* AURANTIACEÆ. *Bergera kœnigii. Kariah path.* * *Feronia Elephantum. Kawect.* * *Aegle Marmelos, Bail.*

Cultivated, but grows in the jungle; the most sacred of trees among the Hindoos; no oath is reckoned so solemn among Mahrattas as that of the Bel and Bandar. Roxburgh's praises of the qualities of the fruit appear over-strained.

*Citrus Limonum.* (Willd). *Weer. Citrus Decumana.* (Willd). *Chu Kotur. Citrus Aurantium.* (Willd). *Narung.*

The Aurungabad orange is celebrated all over the Deccan. Three species are cultivated. 1st. *Sungtra;* which from its name would appear to be originally from China, is a fine orange, very juicy with a loose skin; a quart of juice is yielded by twelve of the fruit; the price at Aurungabad is four rupees a hundred; there are two crops, one at the end of the rains and another in January, it is almost unnecessary to add that the first is inferior to the second. The trees bear fruit at six and are at their prime at twelve or fourteen years old. 2nd. *Kowlah.* A mucilaginous orange, half the price of the former. 3rd. *Naringee.* Common country orange. More aromatic than the

two preceding but less juicy; it is also much smaller, and sold at one and a half the price of the *Sungtra.*

SPONDIACEÆ. * *Spondias Mangifera.* (Willd). *Ambarrah.*
The fruit when taken is said first to purge and then to bind and it has been thence thought, that it might answer as a substitute for rhubarb.

RAMNACEÆ. * *Zizyphus Jujuba.* (Willd).
The bark is said by Rumphias to be used by the Malays in Diarrhœa. The leaves are used by the natives as an application in boils.

BURSERACEÆ. * *Boswellia Serrata.* (Willd) *.Sahl-phul.*
The tree producing the gum olibanum, the ancient frankinsence. Although growing in this neighbourhood particularly in the vicinity of Kunhur in abundance, the gum resin is not extracted.
Olibanum is among the most ancient of medicines, it was used by the Hippocratists * in pectoral and uterine complaints.

EUPHORBIACEÆ. *Croton Polyandrum.* (Roxb). *Duntee.*
Roxburgh says that the seeds of this species of croton are used as a purgative, and that by many Hindoos they are believed to be the real croton.
* *Ricinus Communis.* (Lin.) Cultivated; but the oil expressed is of an inferior quality being nauseous and somewhat acrid. The best oil in this part of the Deccan comes from Hingolee.
* *Jatropha Curcas.* (Willd). The pignon des Indes of French writers. The seeds possess a fixed oil on which their purgative qualities depend; they are used and are boiled in milk to prevent griping.
* *Jatropha Manihot.* (Willd). Tapioca tree; good tapioca has been prepared from trees growing here which flourish well.
* *Jatropha Glandulifera.* Coral tree; in gardens as an ornamental shrub.
*Tragia Cannabina.* (Roxb). * *Phyllanthus Niruri.* (Willd). *Booien Owlee.* Bitter; used in leucorrhœa and gonorrhœa; also as an application in gun shot wounds.
* *Phyllanthus emblica.* (Willd). *Owul Kinsi.* Grows to be a tall beautiful tree; the emblic myrobalan is its well known fruit. Dried fruit powdered with curds given in dysentery.
* *Acalypha Indica.* (Willd). * *Acalypha betulina.* (Willd).

' *Euphorbia neriifolia.* (Willd). * *Euphorbia antiquorum.* (Willd). ' *Euphorbia tirucalli.* (Willd). *Pood maree.* * *Euphorbia tithymaloides.* (Willd).

Other species of *Euphorbia* are occasionally employed by the natives.

CELASTRACEÆ. * *Celastrus nutans.* (Roxb). *Malkunghnee.*

The remarks hazarded when describing the properties of the juice obtained from the *strœmia tetrandra* must be in a certain degree applicable to the celebrated oleum nigrum of Dr. Herklots; the process by which they are both procured being the same.

The process of the oil in Beriberi has been well attested in the valuable work of Dr. Malcolmson on Beriberi and Rheumatism. The celastrus nutans is common enough here and the oil is used for rheumatic complaints, with frictions.

PORTULACACEÆ. * *Portulaca Oleracea.* (Lin). * *Portulaca Quadrifida.* (Roxb). Eaten as demulcents.

SILENACEÆ. Various species of pink are cultivated here, and the *saponaria perfoliata* found here, very probably possesses all the real or supposed properties of the *saponaria officinalis.*

TAMARIACEÆ. *Tamarix diœen.* (Roxb). Bark bitter, astringent, and probably tonic.

ZYGOPHYLLACEÆ. *Tribulus Lanuginosus.* (Roxb). Used as greens; capsules supposed to be aphrodisiac; its congener and close ally the *Tribulus Terrestris** is used in the Ionian Islands in decoction for nephritic complaints. (W. and Arnold).

*Fagonia mysoriensis.* Aphrodisiac like the preceding.

RUTACEÆ. * *Ruta Graveolens.* (Lin). *Suddag.*

Used originally as a safeguard against infection; by a very common transition, it is now looked on as a charm; it is used as an anthelmintic by the natives.

XANTHOXYLACEÆ. *Ailanthus excelsa.* (Willd). Bark of the tree a weak bitter.

* Medical Topography of Mediterranean.

OXALIDACEÆ. *Averrhoa carambola.* (Willd). *Karumbul.* *Oxalis corniculata.* (Willd).

ROSACEÆ. * *Rosa centifolia* (Lin). Cultivated at Kunhur for rose water. The conserve of roses is a good purgative but is apt to gripe.

LEGUMINOSÆ. *Crotalaria uniflora.* An infusion of this plant is given to allay severe thirst in disease.

* *Crotalaria verrucosa.* (Willd). * *Crotalaria juncea.* (Willd). *Tagg.* The flowers are eaten in rheumatic cases. * *Trigonella fœnum Græcum.* (Lin). *Maytee.* *Indigofera cœrulea.* (Willd). Root burnt applied in tooth-ache. * *Clitoria Ternatea.* (Willd.) *Æschynomene grandiflora.* *Angustee.* The bark of this tree is enumerated by Humboldt in a list of febrifuges ; * it is on this excellent authority that it is given. The flowers are eaten as a potherb by the natives.

* *Cicer arietinum.* (Lin). *Urburee.* The green plant is used by the Portuguese in dysmenorrhæa. It is put in hot water and the patient sits on the steam, this is only another way of steaming with vinegar.

* *Abrus precatorius.* (Willd). * *Erythrina Indica.* (Willd). *Pangrah.* * *Carpopojon Pruriens.* (Roxb). * *Butea Frondosa.* (Willd). *Paras.*

East India kino tree, said to indicate a suspicious locality, but to the medical topographist the remark of Lord Bacon " that the goodness of the air is more known by experience than signs" should not be lost sight of. Seeds anthelmintic.

*Dalbergia arborea.* (Willd). *Kurrunj.* * *Acacia Arabica.* (Willd). *Bahbaree.* *Acacia Serissa.* (Lin).

Dr. Malcolmson mentions that he has seen natives plucking the leaves of this tree as a cure for beriberi.

* *Acacia Cinerea, Mimosa Cinerea.* (Roxb). * *Acacia Sundra.* (Willd). * *Acacia Catechu.* (Willd).

Both yield catechu, but the trees are so stunted in their growth in this neighbourhood, that the manufacture of catechu from them would be vain and unprofitable.

* *Acacia Scandens.* (Willd). * *Mimosa pudica.* (Willd). * *Cæsalpinia Bonducella.* (Fleming). *Kool Kulunjen.*

* Humboldt, Tom. ii. Note to pages 38, 39.

Seeds a well known febrifuge. The roots rubbed down with water and applied to wounds inflicted by scorpions; a portion of the root is also taken internally for the same purpose.

* *Poinciana Pulcherrima.* (Lin). * *Tamarindus Indicâ.* (Willd). Two varieties red and green, the former in most esteem. The following emetic is given by natives, in cases of poisoning requiring immediate emesis; a few copper pice are put into some tamarind infusion, which is stirred about for a minute or two and then administered. It would be a waste of time to explain, how vomiting takes place by this very obvious means.

*Cassia Fistula.* (Willd). *Baharchee.* Leaves cooked with prawns give in diseases of the spleen. *Senna Absus.* (Roxb). *Senna Exiguâ.* (Roxb). *Chaksoo.* 171-13

The pounded seeds of these last two species are in great use among the natives as a cure for ophthalmia; a small quantity of the powder is inserted between the tarsus and eye-ball, and according to some little experience I have had, it is in certain cases a good and safe remedy. The seeds may be procured in every bazar in the Deccan, being the most common remedy the natives employ for ophthalmia.

*Senna Tora.* (Roxb). *Senna Toroides.* (Roxb). *Tarota.* The leaves of these scarcely distinguishable species are used by the natives as medicinal greens. The seeds are likewise employed in psora as an external application.

*Senna Sophora.* (Roxb). Leaves eaten in nyctalopia, flower applied to the loins in cases of Malabar itch.

* *Senna Auriculata.* (Roxb). The chopped leaves mixed with one half their quantity of the earth of a white ant's nest, are applied to swelled legs in horses.

*Bauhinia Purpurea.* (Willd). *Kunchenu.* Flowers eaten in dysentery. Flowers of other species employed for the same purpose and are all called indiscriminately *Kunchenu.*

CRASSULACEÆ. * *Cotyledon Laciniata.* (Willd). *Panmohr.* Leaves eaten as greens and esteemed cooling; they are subacid, without an unpleasant taste.

ANACARDIACEÆ. * *Semecarpus Anacardium.* (Willd). *Bilaba.* The juice of the shell of the marking nut is very generally employed by the natives as an epispastic and also taken internally in venereal complaints. The belief of its efficacy in the latter being most probably derived from the old doctrine of signature which obtains here, as a popular notion. Every one who has had any prac-

tice among natives, must have had occasion to see the troublesome and sometimes fatal consequences produced by its abuse. Its effects on different individuals are strangely dissimilar, on some, it acts simply as a blister, while on others deep ulcerations with sloughing and even death itself (if the scrotum be the part on which it is put) are the results of its application: even sleeping under the tree is said to be attended with very troublesome consequences; by subjecting the juice to a species of distillation it is said to be rendered more manageable as an epispastic. The whole nut is given to horses in farcy; the native farriers commence by giving one a day and gradually increase the dose by one, till they reach fifteen which is the maximum given, they then decrease the quantity by one; they think it a good remedy.

URTICACEÆ. * *Cannabis Sativa.* (Willd).

In addition to its well known qualities this plant is said to be an excellent Hypnotic, and to succeed when opium, hyosciamus, &c. have failed; if so it would be a vauable addition to the Materia Medica.

* *Ficus religiosa.* (Willd). *Guleree.* * *Ficus Indica. Bohr.* * *Ficus Carica.* (Willd). *Unjeer.* * *Ficus glomerata.* (Willd). *Oomber.* The juice of the tree tapped in the morning is given by the Kolies to their children. *

PIPERACEÆ. * *Piper Betel.* (Lin). Much Cultivated here: root used in fever. * *Piper Longum.* (Willd). A few specimens in gardens.

SANTALACEÆ. * *Santalum album.* (Lin.) *Santalum Myrtifolium* (Roxb). Wood considered heating and stimulant.

ARISTOLOCHIACEÆ. * *Aristolochia bracteata.* The natives have an idea that if the common dog fly gets into the ear, very fatal consequences may result. For this reason, they are very anxious to get it out and use the juice of this species of Aristolochia for the purpose.

AMARANTHACEÆ. * *Amaranthus campestris.* (Willd). * *Amaranthus spinosus.* (Willd). Leaves used for poultices. * *Achyranthes aspera.* (Willd.) *Agullah. Achyranthes Alternifolia* (Banks herb). Whole plant used with black pepper in fever.

* McIntosh's account of the Kolies.

Polygoneæ. *Polygonum Barbatum.* (Roxb). Plants after being steeped in urine, applied in Rheumatic cases to allay the pain. *Rumex vesicarius.*

Nyctagineæ. * *Mirabilis Jalapa.* (Persoon).

Grows here in great abundance. Flowers of various colours, its leaves are used as discutient.

* *Boerhaavia Prostrata.* (Herb Banks). The root of the red stemmed variety applied to snake bites.

Menispermaceæ. * *Menispermum cordifolia.* (Willd).

The well known *gulancha* plant of Bengal. When the fever comes on without shivering, a decoction of the plant without additon is administered. When rigors are present, black pepper is added.

*Menispermum Pluckenetii.* (De Candolle). Used as the preceding.

Sapotaceæ. * *Mimusops elengi.* (Willd). * *Mimusops hexandra.* (Willd). * *Bassia Latifolia.* (Willd). *Mowah.*

The mohwah spirit is prepared in the adjacent hills where the Bassia grows. By the first distillation an unwholesome ill flavoured spirit is obtained and is known to European soldiers under the name of *fanny*; the second distillation gives a spirit much stronger and more palatable, resembling in flavour Scotch whisky.

Convolvulaceæ. *Ipomæa quamoclit.* (Willd). Root sternutatory. *Ipomæa cærulea.* (Koenig M. S. S.)

This proposed substitute for Jalap is one of the most common of the order, growing in every hedge; its seeds are said to be an excellent purgative and to be unattended in their action by griping, so common an occurrence with other resinous purgatives.

* *Convolvulus Turpethum.* (Willd). *Dodd kalnie.*

* *Convolvulus grandiflorus.* (Lin). Leaves an application in guinea worm. * *Evolvulus Alsinoides.* (Willd).

* Rubeaceæ. Chinchonaceæ. *Gardenia Lucida.* (Roxb). *Decamullee tree.*

One of the trees producing the *Decamullee* or cumlie gum as it is called, is found growing in some of the city gardens, but is no where seen wild in the neighbourhood. Cumlie gum is clearly a misnomer as the substance in its chemical relations is a resin. Its properties being insolubility in water, solubility in alcohol; it is dissolved also by Sulphuric Acid: a black liquor being produced.

The resin is very much used by the natives of the Deccan in medicine, in fever combined with bitters and in cholera with stimulants; it gives great relief to children when teething by being rubbed on the gums after being softened by lime juice.

* *Gardenia Dumetorum.* (Willd). Grows in the jungles near Kunhur. * *Morinda Tinctoria.* (Roxb). Cultivated, a very exhausting crop. * *Ixora parviflora.* (Lin). * *Pavetta Indica.* (Lin). * *Coffœa Arabica.* (Lin). Coffee grows well here; the tree produces a scanty but well flavoured crop.

COMPOSITÆ. * *Vernonia Anthelmintica.* (Willd). * *Eclipta prostrata.* (Willd). *Xanthium Indicum.* (Koenig M. S. S.)

The capsules placed in the ear in cases of ear-ache; they can have no other effect than simply excluding the air.

* *Verbesina Sativa.* (Willd). *Karleh.* Cultivated for its Oil. * *Cacalia Kleinii.* (Persoon). *Oonneree.* This plant has been proposed to be substituted for Sarsaparilla. The natives apply its fleshy leaves to wounds inflicted by rats.

*Carthamus Tinctorius.* (Willd). *Kurdee.* Cultivated as an oil plant.

*Cichoria Kosmii.* (De Candolle). Leaves and infusion of seeds used in dropsy. * *Lactuca Sativa.* (Lin). In gardens. *Sonchus Oleraceus.* (Willd). Eaten as a vegetable; infusion given after the exhibition of mercury in syphilis.

*Pyrethrum Indicum.* (Roxb). The plant given in Gonorrhœa along with black pepper. The root produces the same tingling as its congener the *Pyrethrum* and might be used for the same purpose.

* *Sphœranthus mollis.* (Roxb). Flowers eaten in ophthalmia.

*Echinops echinatus.* (Roxb). Infusion of the plant given, when an undue quantity of the Ruscapoor has been taken.

*Chrysanthemum Indicum.* (Willd). Leaves used in secondary syphilis.

PLUMBAGINEÆ. * *Plumbago Zeylanica.* (Willd).

CORDIACEÆ. *Cordia Latifolia.* (Willd). *Bhokur.* * *Cordia Myxa.* (Willd.) *Gondnea.* Fruit demulcent; used by the ancient * Greeks in various female complaints. We are told by Wilkinson † that the ancient Egyptians extracted from the *Cordia Myxa* a spirituous liquor.

* Dierbach. † Ancient Egyptians

EHRETIACEÆ. * *Ehretia Buxifolia.* (Willd). The root of this plant might be tried as a substitute for Sarsaparilla.

BORAGINEÆ. *Borago Indica.* (Willd). *Borago Zeylanica.* (Willd). In common with many of the *asperifolia*, the leaves of these two species contain mucilage, they are employed by the natives for emollient poultices.

PLANTAGINÆ. * *Plantago Ispagholu.* (Fleming). Cultivated here for its seeds, the use of which in bowel-complaints and gonorrhœa, is well known.

LABIATÆ. The aromatic plants of this order are mostly all employed by the natives in medicine; their seeds as carminative and the leaves rubbed on as rubefacient: it would be endless to enumerate all which are used.

*Mentha Sativa.* (Lin). *Podin. Phlomis esculenta* (Roxb). This is the plant supposed to be resorted to by the Mungoose when bitten; it has hence been presumed an excellent remedy in snake bites.

*Phlomis cæphalotis.* (Koeing M. S. S.) Infusion of this plant and of the leaves of the fig-tree drank in gonorrhœa.

*Ocimum Fruticosum.* Leaves applied to kill vermin in the sores of horses, &c.

* *Ocimum odoratissimum.* (Willd). * *Ocimum Sanctum* (Willd). *Ocimum Tuberosum.* (Roxb(. Probably the *Plectranthus tuberosus* of Ainslie. Tubers accounted aphrodisiac.

*Ocimum Modorum* (Koenig M. S. S.) Used in weakness of loins in horses.

* *Plectranthus aromaticus.* (Roxb.) *Melissa Officinalis* (Lin). In gardens.

PEDALIACEÆ. * *Pedalium murex.* (Willd). * *Sesamum Indicum* (Willd). *Sesamum Orientale.* The sesamums are well known oil plants. The Jesuit Pere Petit mentions that one part of the oil with two parts of water shaken together, is a popular remedy in India for head-ache.

ACANTHACEÆ. * *Justicia Paniculata.* (Lin). *Creyat.* Found in great abundance here, particularly in the tomb garden: it is an exceedingly hardy plant, rooting itself in the chinks of the pavement and crevices of the walls. The virtues of this plant as an excellent bitter are well established. Native Druggists are in the constant

habit of confounding it with the *gentiana cheyratta*. Its close ally the *justicia echiodes* is likewise very bitter and might be employed as such if occasion demanded, it also grows here in great plenty.

* *Justicia Bicalyculata.* (Lin). Leaves boiled in butter applied to wounds.

* *Justicia Adhatoda.* (Willd). * *Barleria Prionitis.* (Willd). * *Barleria Longiflora.* (Willd). *Ruellia Longifolia.* (Roxb).

Seeds used as an addition to a poultice to render it stimulant. Leaves eaten as greens.

*Blephanis Boheroifolia.* (Decandolle). The whole plant is used in infusion in dysmenorrhœa.

OROBANCHACEÆ. *Orobanche ramosa.* (Buch).

The root of this common parasite is used for tooth-ache. Astringent.

SCROPHULARIACEÆ. * *Gratiola Monneœrü.* (Lin). *Columnea Ringens.* (Roxb). The juice of the leaves mixed with sugar is taken in gonorrhœa.

SOLANACEÆ. * *Capsicum Annuum.* (Willd). * *Capsicum Frutescens.* (Willd). *Meerchee.* Other species of Capsicums are cultivated in gardens.

* *Solanum Jacquini.* (Willd). *Kuntah Kaseeke.* * *Solanum Rubrum.* (Willd). *Camoonee.* The juice of this plant along with the seeds of the *Nigella sativa* is employed in cases of dropsy.

* *Physalis Flexuosus.* (Willd). * *Physalis Minimus.* (Willd). * *Datura Fastuosa.* (Willd). *Dohtra.* * *Datura Metel.* (Willd). *Nicotiana Tabacum.*

The tobacco grown here is very indifferent, fit only for snuff or *goracco.* The soil most suited to it, that containing a large proportion of the peroxide of iron, does not exist in this neighbourhood.

GENTIANEÆ. *Gentiana Verticillata.* (Lin). *nace.*

This species of gentian is much employed by the Natives in medicine whether human or veterinary, it is an intense bitter and may be had in any quantity, being a very common plant.

The characteristic of all the gentians is bitterness and it may be questioned, whether the worm eaten and sometimes musty *cheratta* procurable in the bazars here, can equal in its effects the fresh *Gentiana verticillata.* It is on this account worthy of the attention of the profession in this part of India.

ASCLEPIADACEÆ. * *Asclepias volubilis.* (Willd). * *Asclepias gigantea.* (Willd). *Akra.*

Every part of this plant, root, stem, leaf, and flower, is employed by the Natives of India as medicine. The stigma is chewed in pan as a strengthening and corrective, the stem is used in fumigation as a cure for rheumatism and stiff joints.

Dr. Duncan, in a number of the Edinburgh Medical and Physical Journal, has found fault with Dr. Ainslie for calling the *Asclepias Gigantea* and not the *Calotrophis procera*, the real Madar plant; but without reason, as from the roots of both, Madar is procurable.

* *Asclepias eclunata.* (Roxb). *oohun.*

Juice of the roasted flowers given to children in coughs. Seeds used as a purgative.

*Asclepias pseudosarsa. Country Sarsaparilla.* Grows here in great abundance particularly at the village of Sattara, where the sides of the water-courses are clothed with it. The root has a peculiar, but by no means disagreeable smell, and is not, as Dr. Ainslie states, inodorous; its infusion is given with the root of the *physalis flexuosa* in fever, and also to children of a weak habit of body.

At the end of the hot season if we may judge from the diminished odour of the roots, it parts with some of its properties, it should be gathered at the end of the rains.

* *Asclepias curassavica.* In gardens, where it is cultivated as an ornamental plant.

APOCYNACEÆ. * *Vinca parviflora.* (Willd). * *Nerium odorum.* (Willd). Leaves used in the Ionian islands as an application in the form of an ointment in psora.* The flowers contain Prussic acid; and the root, a strong poison, is often given by native women as a means of recalling lost affections.

* *Carissa carandus.* (Willd). *kurwund.* The seeds of the *Caround* pounded and mixed with the flowers of the *muhwah (Bassia Latifolia)* are made into balls by the Bheels and taken by them on long journeys to allay the cravings of hunger. An infusion of the root is also used as an eye-wash.

JASMINACEÆ. *Jasminum Sambac. Jasminum Latifolia.* Both these species are found in the jungle and two or three more are cultivated in gardens for the beauty and fragrance of the flowers. Jasmine flowers are thought cooling and applied to the breasts of

women to repress the flow of milk; a pill made of the bruised flower is also used in tooth-ache †

*Nyctanthes arbor tristis.* Tubes of the corolla considered stimulant.

MONOCOTYLEDENOUS.

ZINGIBERACEÆ * *Zingiber Officinalis.* (Lin). Cultivated Dry ginger is sold in the bazar for three rupees a seer.

* *Curcuma longa.* (Willd). *Haldee.* Cultivated at Phoohnurry, Sailour and on the Booranpoor road; it requires a rich black soil. Natives are in the habit of rubbing their hands and feet with it in cases of internal heat; it is used also in wounds, bruises, pain.

*Amomun Cardamomum.* (Lin). Cultivated in gardens for the sake of its flowers and foliage; seeds seldom attain perfection.

MUSACEÆ. Various varieties are cultivated here; the wild variety is found growing among the rocks at Roza.

*Musa Sapientum.* (Willd). *soukel*

AMARYLLIDACEÆ. *Curculigo orchioides.* (Roxb). The root boiled withmilk: a favourite aphrodisiac among the natives; it evidently contains mucilage.

ORCHIDACEÆ. *Orchis. Orchis Commelinæfolia.*

I regret not being able to ascertain the species of the first *orchis*; it grows abundantly in the ravines leading from the Santmullah range to Kandeish; the tubers are collected by the Bheels and sold by them for two pice a seer. The art of preparing salep is but imperfectly known to the natives; otherwise it cannot be conceived how such a favourite article of diet in certain cases, should still be imported and sold at such an extravagant rate in every bazar in India.

I have tasted the salep prepared from this *orchis* cooked with milk, and it appeared to me to possess all the qualities of the Persian or Cabul article; the larger tubers are, it is true, rather bitter but this (as the bitter principle is soluble in water) might with proper attention be removed. A small tuber is found attached to the roots of the *orchis commelinæfolia* which contain bassorine.

PALMACEÆ. * *Sagus Farinifera.* (Willd). The sago palm; a few specimens in gardens.

† Mc Intosh's account of the Kolies

* *Caryota urens.* (Willd). Besides the well known produce of this tree, *Taree,* the pith is said to be capable of being manufactured into sago.

* *Cocos nucifera.* (Willd). *narelee.* A few cultivated here. * *Borassus flabelliformis.* (Willd). *Tarh.* In gardens.

LILIACEÆ. * *Allium Sativum.* (Willd). *Lussun.* * *Allium Porrum.* (Willd). * *Allium Cepa.* (Willd). *Kanda.* * *Scilla Coromondeliana.* (Roxb). *Ran kanda.*

Proposed substitute for squill; it grows on the Kunhur hills; it is used by the natives as a horse-medicine.

* *Asparagus Racemosus.* (Willd). Root mucilaginous, one of the *suffaid Mooslees* of the natives. *Mooslee* being the general name for all mucilaginous roots.

*Aloe Perfoliata.* (Willd). *Korssur.*

Two of the varieties of the *Aloe Perfoliata* are found here. One cultivated in gardens of a brown rusty colour, the other grows spontaneously in the jungles, its leaves are of a dark green colour with white spots. The flowers are eaten as a vegetable by the natives. A common practice is to hang up the whole plant from the roof of the house to preserve the inmates from evil spirits; a similar practice obtains in Egypt.†

COMMELINACEÆ. * *Tradescantia Axillaris.*

PANDANACEÆ. *Pandanus Odoratissimus.* Flowers used in sherbets. Humboldt says that the unripe fruit is accounted emmenagogue in South America.

ARACEÆ. * *Arum Esculentum Awloo.* Leaves discutient.

PISTIACEÆ. * *Pistia Stratiotes.*

* GRAMINEÆ. *Andropogon Iswaranacusa. Rowsah.*

This grass is found about Aurungabad, although not in sufficient quantity to repay the trouble and expense of manufacturing the oil.

In the Deccan, the chief places of the distillation of the celebrated Rowsah oil, or as it is oftener called, the grass oil of Nemâr, are Julgoam or Jamooth villages situated under that branch of the Sautpooras in which Gawelghur is situated and about one hundred and

† Lane's Modern Egyptians.

twenty miles west of Ellichpoor. The panicles of the grass are collected from October, when the plant is in full flower, till the close of the cold season; they are then dried and any impurity adhering to them is carefully rubbed off by the hand; after being soaked in water for two or three days, they are distilled after the manner of spirits and by the same apparatus. Goozerattees usually conduct the process, there is no care whatever bestowed on the cultivation of the plant which flourishes most abundantly in moist valleys and prefers a clayey soil composed of the debris of the hills. This oil as is well known, is in great esteem among the natives as an epispastic and rubifacient in rheumatism and deservedly so. At the place of its manufacture, it may be procured for Rs. 5 a seer, at the commencement of the season and for double that sum, at its termination.

In this bazar its usual price is Rs. 10 a seer but it is of an inferior quality being, very much adulterated with fixed oils.

* *Andropogon Schœnanthus.* (Willd). Cultivated: used by the ancient Greeks as an aromatic and astringent fomentation.

* *Andropogon Muricatus.* (Willd). *khus khus.* Cultivated by water courses in gardens.

* *Oryza Sativa.* (Lin). *oos tambea.*

* *Saccharum Officinarum.*

More than one variety of sugar-cane is cultivated here, the Mauritius cane has been tried at Kunhur, I believe, with success. The usual rough mode of expresssing the juice of the sugar-cane is practised here. Sugar is refined in Aurungabad by the native confectioners (Hulwaees) the process they adopt, is analogous to that pursued by the sugar refiners in the French West Indies and known by the name of claying sugar, substituting for the clay the *Vallisneria verticillata* a plant growing in still clear water. Very good sugar-candy is obtained by afterwards boiling and crystallizing the sugar and which probably, owing to possessing less of the water of crystallization, excels the China sugar in sweetness: a species of lump sugar called *Hola* in balls, is also thus obtained, it is used by the natives in sherbets and reckoned very cooling.

*Saccharum Demomum.* Pith used in bowel-complaints of children.

* *Agrostis linearis.* (Willd). *Harialee.*

CYPERACEÆ. * *Cyperus Rotundus.* (Willd). The tubers of this species of *Cyperus* were at a very early period reckoned stimulant; they were used by the Hippocratists as such, and at this day are em-

ployed by the natives of India in many ways, from a hair perfume to a medicine for Cholera.

CRYPTOGAMOUS. So little has the Botany of this difficult class of plants, been investigated in this country, that the scanty contribution afforded by it to medicine and the arts cannot be wondered at. A parasitical fungus found on decayed and fallen trees, might prove a substitute for agaric. The esculent mushroom is also common here, but much yet remains to be done in this obscure subject. The two following ferns are the only articles of the materia medica that are met with here.

* *Adianthum capillus veneris.* The well known *capillaire fern,* was used by the ancient Greeks as a protective charm, and by the natives of India is employed to rub the gums of teething children with; it is used also in infusion as a tea by the Portuguese.

*Sellignea.* (Bory). *Booie Tace.*

The leaves of a species of *sellignea* are given in infusion in rheumatism.

## *ADDENDA.*

### TEREBINITHACEÆ.

*Amyris.* (Roxb). *Bdellium?*

A gum resin called by the natives *Googool* is the produce of this tree which grows in the neighbourhood of Umber, a town twenty miles to the eastward of Aurungabad. Roxburgh imagined that *googool* was identical with the Myrrh of commerce.

The gum resin is employed by the natives in medecine as a stimulant and also in their religious ceremonies as a substitute for frankincense.

*Apocynaceæ. Nerium coronarium of* (Willd). Common in gardens. *Orchidaceæ Orchis.*

By boiling the tubers of the orchis, I have deprived them of all bitter taste. The chemical principle *Bassorine* is always accompanied with a soluble bitter.

By gathering the tubers in September and subjecting them to the treatment pursued in the Levant I have no doubt, as good an article would be produced, as that sold in the Bazar, at such an exorbitant rate.

## Article V.

### *Annual Report, for* 1839, *of the 1st Regiment, Bombay European Infantry, stationed at Aden.* By J. Howison, Esq.

Presented by the Medical Board, May 1840.

General Observations. Having been only four months in charge of the 1st Regiment, Bombay European Infantry, it will not be expected, that I should be able to give a full and minute medical history of it, for the past year. But this is of little importance, as there is nothing remarkable to communicate on the subject; for though Aden is a new station, of the nature and influence of whose climate we have only of late had any experience, the forms of disease that have hitherto shewn themselves here, are without novelty and without any characteristics of a peculiar kind.

The 1st Regiment, Bombay European Infantry has now been stationed at Aden one year, and has undergone the ordeal of all the seasons, under circumstances of exposure, fatigue and privation, highly favourable to the developement and action of any local or endemic or epidemic disease, that might be common or peculiar to the place; but as nothing of the kind has yet made its appearance, we may presume, that such does not exist at all, and that in this part of Arabia at least, the European is subject to the same diseases that affect him, in similar latitudes in India and to no others of any importance.

At the time the regiment embarked for Aden, many of the men were in a diseased and debilitated state. They had been stationed during the preceding monsoon at Colaba, where fever, dysentery, and the means of obtaining spirituous liquors, always more or less combine to fill the hospital. Many of the men sent on board the transport, were very unfit subjects for active duty; being nearly worn out by long service, in addition to the causes above mentioned, and hence the mortality that occurred amongst them, during the early part of the hot season here. Fever and dysentery are the causes of their death, chiefly given in the hospital returns, but these

were doubtless merely the immediate ones, rendered more active by long standing visceral derangements, schirrous livers, broken down constitutions, and the fatigues of incessant duty. Therefore, the casualties that took place at first, are not particularly attributable to the climate of Aden, but would probably have happened in the regiment, under corresponding circumstances in any part of India.

The diseases which the medical officer is directed chiefly to report upon by the Medical Board, are fever, hepatitis and dysentery and these are the most common and important diseases at Aden, as in India.

*Fever.* The fever most frequent here, is an intermittent one of the tertian type, in general unaccompanied with any particular visceral derangement. An emetic and general bleeding, should the patient be young and robust and have much head-ache, are what I usually prescribe on his coming into hospital; and afterwards purgatives and diaphoretics till the skin becomes cool, the tongue clean and the secretions natural. The quinine is then given, only to the extent of eight or ten grains a day, and the disease is generally subdued in the course of a week. Several severe cases of continued fever occurred last July and August, when it was necessary to use mercury; but instances of this kind appear to be rare at Aden, at least hitherto, and the cases of fever that have occurred, whether among the men or officers since I received charge of the Regiment, have been manageable and of short duration and therefore do not require further remark. The total number of fevers, remittent and intermittent admitted during the year, is two hundred and forty one, of which only two have died.

*Hepatitis.* This has not hitherto been a disease of frequent occurrence at Aden, and nearly all the cases I have had in hospital, were rather relapses or recurrences of the complaint, in persons long subject to chronic hepatitis, than an original and new disease. In the two cases which terminated fatally (one of which was admitted as fever) the liver was almost wholly converted into the cyst of an abscess and its exterior surface exhibited scars and old adhesions, the result of former and long standing disorganization. The generality of cases of hepatitis, have yielded readily to general and local bleeding and mercury, and have shewn no peculiarity of any kind. The comparative mildness of this disease at Aden, may be chiefly attributed to the temperate habits of the men, who have no means of obtaining more than their regimental allowance of spirituous

liquors ; and to their exemption from much exposure to the sun, neither duty nor amusement leading them much into the open air. The total number of cases of hepatitis during the year, is sixteen, of which, two proved fatal.

*Dysentery.* This is the most formidable disease at Aden, both as respects its frequency and its dangerous character. The dysentery of Aden as far as my observation extends, is precisely similar to that of the coasts of India generally ; but here, a particular relaxation and torpor of the constitution acts unfavorably on the patient, and at the best, much retards his convalescence and final recovery. For this reason, general bleeding is objectionable when it can be dispensed with, but it is not always easy to distinguish cases of that kind, either here or elsewhere ; for, an active inflammation may be insidiously going on in the abdomen without any clear indications of the mischief. To avert this evil, I have generally employed bleeding in the treatment of severe cases of dysentery, nor when the cases proved fatal, have the appearances on dissection ever made me regret having done so. After the usual preliminary doses of castor oil and of calomel and opium. I generally prescribe the dysenteric pills of pilul. hydrarg. pulv. ipecac. and pulv. Jacob, but should there be much blood in the stools, I employ the acetate of lead, to the extent of five or six grains three times a day, always combined with dovers powder or pulv : cretæ. c. opio. The large doses of the acetate of lead have a powerful effect in checking the internal hemorrhage, nor have I ever observed any inconvenience to the patient from their use, even when continued for several days in succession. In addition to this, I give scruple doses of calomel at night, and introduce mercury into the system by friction, and when the evacuations have become natural or nearly so, begin with astringents and tonics under various forms and combinations. But here, as everywhere in India, the sequelæ of dysentery are often more obstimate and unmanageable than the disease itself, and the patient too often relapses or after long lingering, dies, from absolute debility. The total number of cases of dysentery and diarrhœa during the year, has been one hundred, of which, nine have proved fatal.

If the climate of Aden has any morbid peculiarity, it consists in its unfavorableness to convalescence from acute disease. In these cases, a languor and want of action in the system, continue long after the removal of the immediate cause, and a change of air becomes essential to the patient's complete recovery. This is distinctly the case even in the cold season, and it must be much more so, in the hot

one; and in this point of view Aden will be found a most trying and enfeebling station to an European Regiment, should much sickness prevail. The men treated in hospital might be discharged cured, but they would remain convalescent. Our hostile relations with the interior, unfortunately prevent our forming a station for invalids on the high lands there, which would doubtless save many lives, both native and European, and also the expense and delay attendant upon sending diseased men to Bombay.

Those ulcers which have appeared so extensively and formidably amongst the native troops at Aden, have not hitherto affected Europeans in a single instance; though it is a general, and I think well founded opinion here, that wounds and sores are much more tedious in healing at Aden than in India. In cases of local inflammation, &c. I frequently make issues with potassa fusa, and I have observed that these, instead of shewing that tendency to granulate and cicatrize, which is often so inconvenient to the surgeon, when he wishes them to be kept open for a length of time, are very languid in their action and even require to be stimulated, before they will heal. But they have never shown any tendeucy to a morbid or malignant action. which proves that it is not the contact of the atmosphere with a denuded surface that causes the inveterate ulcers of Aden, but rather something constitutional in the individual suffering from them and dependent upon diet and mode of life. The Portuguese at Aden are as free from these ulcers as the Europeans, which I attribute entirely, to their using animal food and spirituous liquors, as the latter do.

I am happy to state, that no instance of spasmodic cholera has occurred at Aden amongst either the European or native troops, and it would appear, that the inhabitants of the town, both Jew and Arab, are unacquainted with the disease either by personal observation or hear-say.

| | | |
|---|---|---|
| Strength,..... | 724 | On the 31st Dec. 1839. |
| Included in the returns,..... | 345 | |
| Absent on command beyond the division..... | 379 | |
| Total | 724. | |

Number of sick remained 31st December, 1838.....None.
Admitted in 1839..... 670
Discharged..... 627

| | |
|---|---|
| Died in Hospital | 20 |
| Remaining 31st December, 1839 | 23 |
| Average daily number of sick for the year | 23 |
| Average number of convalescents | none |
| Died without receiving medical treatment | 2 |

ADEN,
1st. January 1840.

## Article VI.

### *Report on the Cases of Aden ulcers received into the Marine Battalion Hospital, Bombay* 1839. By A. Campbell, M. D.

Presented by the Medical Board, May 1840.

Having been ordered on the 16th August last, to do duty under Surgeon Burnes, K. H. of the Marine Battalion, I was directed by that officer to devote my attention exclusively to the care of forty-four cases of Sepoys, chiefly of the 24th Regiment N. I. received from Aden, with foul sloughing ulcers. Of these cases, twenty-six were only disembarked from the transport on the day I joined; and having had a passage in a crowded vessel of twelve days, the fœtor of the ulcers was intolerable, while the ulcers themselves, without a single exception, had a foul appearance. The remaining eighteen cases were previously in the Marine Battalion Hospital; having been received from Aden on the 2d July, and with one or two exceptions, were doing well.

It is not my intention to enter into any lengthened disquisition, on the nature of the manifold exciting causes of this class of diseases in general. One thing I cannot help remarking, however, in reference to the present cases, is the fact, that all the ulcers, with a single exception, have been confined to the anterior part of the leg, dorsum of the foot and heel; a peculiarity to be observed in almost all sores of this description. I cannot think, that the explanation offered of this phenomenon, is altogether satisfactory, viz; "that by their distance from the centre of circulation, the supply of blood to them must be languid." Now these parts are by no means the most remote, and were this the only cause, why do we not oftener meet with ulcers on the toes, sole of the foot, and back part of the leg? I am led to consider, that it admits of a more sensible explanation, in the fact, that there is less cellular and adipose tissue in these situations, to act as a bed for the nutrient vessels, and also as a cushion to modify the force of any external injury, which the close connexion of the integuments to the bone, must materially favor. That the feeble

state of the nutrient vessels is a most powerful cause, is proved by the fact, of old cicatrized ulcers spontaneously breaking out again, in cases of long exposure to debilitating causes. These cicatrices being but sparingly supplied with blood and possessing but little vitality.

With reference to the cases now under consideration; from all I could learn by the reports sent from Aden, or glean from the statements of the patients themselves, they seemed to have been exposed to none of those exciting causes which are considered essentially necessary to the production of this formidable class of diseases. On the contrary, their food was uniformly of good quality and procured in abundance, their clothing and quarters clean, and comfortable. The only complaint they seemed to urge, was hard duty, and exposure to intense heat of the Sun, to which they had been subjected.

This with some specific morbid condition of the atmosphere, seems to have so charged their systems with this taint, that the most trivial scratch was speedily converted nito an extensive phagedena advancing with most fearful rapidity, in spite of all the remedies employed. Finding that its progress was not influenced by the means resorted to; a change of air was deemed expedient and to attain this object they were sent to the Presidency.

The character of all the sores seemed to be pretty nearly similar; the peculiar features and constitutional disturbance answered exactly to the appearances of true scorbutic ulcers, as described by Military and Naval writers. They were for the most part, extensive and ill conditioned, with raised, ragged and discoloured edges, the natural color of the skin preventing the true livid appearance (as described by authors) to be detected. The surface in most cases was covered by a reddish brown, sometimes gray slough mixed with clots of blood, raised considerably above the level of the surrounding integuments and in two cases, projecting so as to assume the appearance and character of a fungous growth. On the separation of these sloughs, some of which were remarkably tough, tenacious and firmly adherent; the disease was found to have penetrated to a considerable depth, involving all the textures, and exposing the different structures, as nicely dissected, as if they had been prepared for anatomical demonstration.

This appearance of extreme depth was however, somewhat deceptive, as the effusion into the subcutaneous cellular tissue, tended to thicken and raise the skin and made its surface appear much higher than it really was.

The sores were exquisitely tender, and the slightest touch was

followed by an oozing of blood more or less considerable. A thin bloody acrid serum seemed to take the place of healthy pus, and the fœtor from the sore was intolerable. All complained of burning pain in the sore, invariably aggravated at night, when their suffering was truly distressing, requiring the strongest narcotics to induce sleep, or a remission of their tortures.

The limbs to a greater or less extent, were swollen and tense to the feel, the color of the skin prevented our being able with precision to detect the ecchymosed patches — a peculiar feature in this disease, but which was established by subsequent appearances on dissection. This tenseness of the limbs seemed to be a source of much irritation.

The constitutional disturbance in general, was in ratio to the size, extent, and intensity of the local affections; in some cases, the gums were spongy and sore; in others, a peculiar metallic taste in the mouth was complained of; in one case, in which the scorbutic taint was strongly marked and who died from scorbutic dysentery; pain, bleeding from the gums and looseness of the teeth were prominent symptoms. All the patients complained of pains in the limbs, back, &c. and in the more severe cases, great restlessness and a countenance denoting most distressing suffering and anxiety, was visible. In general, the pulse was weak and stringy; tongue clean, and bowels for the most part regular; slight diarrhæa occasionally supervened but easily yielded to ordinary remedies. The disease progressed rapidly, involving muscles, bones, and tendons, and in several instances large portions of tendons sloughed off; in one case, where the ulcer was situated over the heel and extended considerably up the back part of the leg, about two inches of the tendo achillis sloughed away —I did not despair however of good motion being preserved to the limb (nor was I disappointed in this case) from the numerous examples in which, tendons have been divided on account of malformation.*

*Treatment.* Immediately on admission, the greatest care was taken to separate the cases not only from the other patients in Hos-

* In some experiments which I had occasion to carry on last season in London, I found, that by dividing the tendons of rabbits, even under the most unfavourable circumstances; where the animals were allowed full scope to jump about, thus separating the edges of the divided tendons to a considerable extent, from the immense lever and force exerted by the animal in its motions, all being performed by a spring from the hind legs; still under such circumstances, union was effected, leaving no deformity and I afterwards found on dissection, that the intervening space, which was considerable, was filled up by a substance resembling in all respects, tendinous structure.

pital, but even from themselves; with this view, Dr. Burnes directed them to be distributed between the Marine Battalion Hospital itself, and a large Barrack and school room. Notwithstanding, the cases of ulcers already healed immediately put in an unhealthy action, and in a short time assumed the same character and severity as the recently admitted ones.

The strictest attention to cleanliness was enforced and each patient was furnished with rags, lint, &c. A fresh vegetable diet was enjoined and a plentiful supply of fresh fruits (pumeloes and plantains) distributed; in a few cases, animal food was recommended.

The external applications and internal remedies employed were various. Of the former, hot turpentine and resinous dressings; cataplasms of linseed, pumpkin, and carrot; poppy head fomentations, solut: opii: with the view of allaying the excruciating pain in the sore, solut: cupri sulphat: solut: nitr: potass: acid: nitric: dilut: Creosote although highly recommended, appeared to me to serve but little purpose beyond relieving the intolerable fœtor from the sores; with this view also, charcoal and chloride of soda were employed.

Of the internal remedies; in addition to those already cited, a formula containing lime juice, port wine and infusion of cinchona, was freely employed; in some cases, with the slight modification of arrack and sulph: quininæ in others solut: nitrat. potassae and acid: nitric: dilut: Of course, the free use of opium and other narcotics was found indispensable to relieve the excessive pain and restlessness.

These various remedies were had recourse to, in the hope of being able to form some estimate of their respective value; this object was however frustrated by the frequent changes from one set of medicines to another, which it was found necessary to adopt; the system ceasing to be so influenced, by a continued application of the same stimuli.

The diluted nitric acid seemed to be the remedy whose action was best marked; it was employed externally and internally and seemed to be most efficacious in arresting the destructive process and in determining to the separation of the tough and adherent sloughs. I did not in any case, perceive the physiological effects attributed to a continued use of this acid.

On the appearance of a healthy action in the sore, strapping and bandaging were employed; to a careful application of which means, much of the success is attributable. Indeed, in a certain state of the affection, and when carefully and properly applied, no class of remedies are so useful or on the other hand, so injurious, as when applied in a careless and slovenly manner; exerting unequal pressure over the limb &c. In almost all the cases (especially in the more severe

ones) after a healthy action had been for some time established, and the sore was determining rapidly to a cure, an unhealthy spot would suddenly shew itself, gradually extend and at last reduce the whole sore to its original condition. This however, generally gave way in a few days to the healing process again.

In two cases alone, I had occasion to amputate; these cases and their results shall be given in detail.

The means above related and a thorough draught of fresh air, a removal from the exciting causes of the affection, change of air, the moral effect of being again in their own country and near their relatives and friends, must have aided in no small degree to their restoration.

Of the efficacy of moral treatment we find the good effects in Captain Parry's narrative, where by amusing and occupying the minds of his crew, by representations of plays, masquerades, &c. he managed to preserve them exempt from scurvy, under circumstances most favourable to is production.

*Pathological appearances.* I was fortunately able, by a little management, to obtain an inspection of a few of the bodies after death; the appearances as they presented themselves, I shall now report.

The bodies were generally emaciated and the whole extent of the affected limb much swollen. The immediate seat of the affection presented one pultaceous mass, without the slightest vestige of its original structure. On making an incision through the surrounding integuments, the soft parts were found to be comparatively healthy, although the skin was undermined to some extent by the disease; the incision was followed by the escape of a quantity of serum.

On dissecting the muscles in the immediate vicinity of the sore, large masses of effused blood in black clots, were found to occupy the intermuscular spaces; this with the effused serum noticed above, was doubtless the cause of the swelling and tenseness observed in the limbs. The bones were carious to a greater or less extent and demuded of their periosteum, in general, considerably beyond the margin of the ulcer; this membrane to a still more considerable extent, was observed to be much thickened, and in parts raised and separated from the bone by clots of blood, in other instances by the effusion of a large quantity of bloody serum, which raised the membrane, giving it a pouch like appearance.

The thoracic and abdominal viscera were found in a healthy state although slightly paler than natural. From regard to the prejudices of the friends, I was unable to carry my examination, to the head.

In conclusion, it is satisfactory to state, that of these forty-four Aden cases, nineteen have been discharged from Hospital, whilst seven only have died; and that the remaining eighteen although still in the list, are almost entirely cured of their ulcers: although the amputation case and it is probable, also some others, must eventually be brought before an invaliding committee.

Bombay, January, 1840.

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## Article VII.

### *Practical observations on the pathology and treatment of Tropical Dysentery.* By James Bird, Esquire.

Presented, June, 1840.

The diversity of opinion, regarding the nature of Tropical dysentery, and the various modes of treatment proposed for its cure, are very perplexing to any one who enters the practice of medicine, and is first called on to stop the ravages of this disease; modified as it may be by circumstances of original constitution, influence of climate and of season, acquired habit of life, and complication of distant organs. The contradictory sentiments entertained on the efficacy of particular remedies, such as opium and purgatives, seem to sanction a conclusion, that the things, with which medical observation is conversant, are of that obscure and deceptive kind, as not to be reducible to the ordinary analysis of inductive philosophy. But, may we not infer, that such differences of opinion have arisen from too limited experience in varieties of this disease, and the hasty conclusions which individuals who see the success of any particular practice, are apt to adopt. Causes such as these, appear to me, to have produced the opposite opinions which have been given on this subject, and if the present paper can in any way tend to reconcile them, by conveying more precise ideas regarding the varieties of dysentery, and the efficacy of particular remedies, useful in some, though hurtful in others, the object of the writer would be fully attained, though it be more than he can hope for. An experience, however, of twenty years in the various climates of this Presidency, embracing the flat and malarious country of Gujerat, the dry and salubrious atmosphere of the highlands in the Deccan, and the generally hot and moist, but changeable air of Bombay, encourages him to hope, that the attempt to particularize the varieties may have its utility.

The division of dysentery into acute and chronic, meant to point out its greater or less severity and the period of its duration, scarce-

ly conveys true notions of its character, or probable result. In deference to custom it may be retained, though it conveys no idea of the real difference of the varieties of this disease, excepting its comparative severity or recent existence; and under this limitation, acute attacks of dysentery embrace four distinct varieties, 1st the phlogistic or inflammatory, 2nd the cachectic, 3rd the hepatic or complicated, and 4th the scorbutic. It is not my intention at present to notice the last, but the following are the symptoms which characterize the three other varieties.

*Phlogistic dysentery.* While, in this variety the calls to stool are ineffectual, the fœces retained, or blood and mucus are passed with much tormina and tenesmus, there is, generally, fixed sharp pain in the umbilical or hypogastric regions; increase of temperature accompained by fulness of the abdomen; much thirst; white tongue; unatural frequency of pulse; and sometimes febrile heat of skin. The last is not invariably present, and forms no part of the essential character of fever in the tropics; where, a moist and heated atmosphere, at particular seasons of the year, causes moisture of the skin, while all the other symptoms of fever are present.

This variety in its mildest form sometimes commences as a simple diarrhœa, which goes on increasing till the stools become mucous, frequent and scanty, are accompained by tormina and tenesmus, without fixed pain in any part of the abdomen. In this *dysenteria mitis*, it is difficult to say where diarrhœa ceases and dysentery begins. It is the form, however, in which I have generally seen the disease among Europeans in Gujerat, and, if early attended to, is easily subdued. The following extract from my quarterly report on diseases among the men of the horse artillery, stationed at Kaira from February to May 1822, is a sufficiently explicit account of this kind of phlogistic dysentery. The symptoms were generally those that appertained to diarrhœa mucosa, and, if not remedied by medicine, were disposed to degenerate into a well marked inflammatory affection of the intestines, attended by fever. In almost all cases, there were copious mucous dejections, griping pain, and spasmodic affection of the colon. The abdominal parietes about the umbilicus felt hard and knotty; the evacuations of mucus were more copious and liquid and the tenesmus less uniformly present than in cases of severe dysentery. A sympathetic pain on the edge of the ribs of the right hypochondrium sometimes accompained the looseness of the bowels, but disappeared when the inflammation of the colon was removed.

*Cachectic dysentery.* In this, the symptoms are nearly those of phlogistic dysentery, from which, however, it is to be distinguished by the abdomen being generally collapsed, the pain duller, and at first less diffused, the pulse small and irritable, or at first little excited; while, the languor and oppression are great, the skin covered with moist and clammy perspiration or affected by chills, and there are marks of a languid circulation or scrofulous constitution. If the symptoms have been preceded by emaciation, and the bowel-complaint attended by intermitting fever of a hectic character, these will be sufficient to point out the probable nature of the existing bowel-complaint, which I have frequently known as the earliest symptom of tuberculous formation in the liver or lungs.

This form of the disease is sometimes seen among men recently arrived from England, who, when on the passage hither, neglecting exercise and the regulation, by medicine, of the alvine evacuation, allow the mucous follicles to become enlarged; and which, in this state, only require intemperance and the influence of atmospheric changes to force them into a state of active inflammation, which sooner terminates in ulceration than when the dysentery is purely phlogistic. Those long resident in India, whose constitutions have been weakened by repeated attacks of fever, and who have suffered much from symptoms of strumous dyspepsia, are particularly liable to suffer from attacks of this variety. The irritability of constitution, which accompanies the dysenteric symptoms, is usually great; the emaciation progressive; and the patient troubled with nightly febricula or copious perspiration.

*Hepatic dysentery*—is disease in the large intestines, complicated with temporary derangement in the circulation of the liver, or progressive disorganization of its structure. In its purely phlogistic or active form, the dysenteric symptoms are accompanied by a yellow loaded state of the tongue, pain at the epigastrium, or right side, and scanty secretion of urine, which is high coloured and passed with scalding. The once prevalent belief, that almost every attack of tropical dysentery is connected with disease in the liver, is admitted to be fallacious, but temporary erethism of this viscus, and copious secretion of acrid bile, are common accompaniments of dysentery, among new comers within the tropics. The strumous form of liver disease, complicating dysentery, is marked by the usual symptoms of its cachectic variety, greatly impaired tone of the stomach; occasional dull pain in the right side; the food passing undigested through the bowels,

and the secretion of urine yielding a copious white sediment and effervescing strongly with muriatic acid.

Dysentery may be also complicated with intermittent fever, or disease of the lungs; which add to the danger of this affection, and embarrass the medical man in applying remedies for the cure of this formidable malady.

*Chronic Dysentery* — is the effect of the acute kind, and is marked by the fœces not being retained, the stools being frequent and fœcal, as in cases of diarrhœa, but here accompanied by dysenteric excretions of blood and mucus, passed with occasional tormina and tenesmus. In this form the appetite is variable and capricious; eating is generally followed by flatulency, and uneasiness in the abdomen; weakness and emaciation are present; the stools which are copious, vary from watery yellow, mixed with undigested food, to the appearance of rice water; thirst great; and tongue white or glazed, and furred at the base.

Pathology of dysentery. The examination of the body, after death, discovers in the phlogistic form of this disease, inflammation of the mucous membrane of the large intestines, which occupies a greater or less extent of the canal, in proportion to the severity of the symptoms. It is found in various states of progress from simple inflammation, accompanied by hypertrophy of the tissues subjacent to the mucous membrane, to a state of gangrene, or continuous ulceration of considerable extent, between the spots of which, the unabraded mucous coat exhibits a bright red vascularity, or dark slate colour * as in plate I. This slate-brown, or grey colour, is considered by Andral, as specially belonging to chronic irritation, to which an acute one often succeeds, giving rise to the symptoms of the true phlogistic dysentery, as happened in the case, from which the morbid appearances in the above mentioned plate were delineated. In this instance the patient died a few days after he was attacked, and as the large intestines were also much hypertrophied, this state must have existed long prior to the active inflammation which supervened and terminated in ulceration. Several similar examples have come under my observation, in which it was evident from the rapid progress of the disease, to a fatal termination, from the period when the dysenteric symptoms were first manifest, that this thickening of the intestines has its origin in pre-

* *Note by the Secretary.* It has been found impracticable to have copies made of the drawings referred to in this paper.

vious inflammation of the sub-mucous cellular tissue. It was impossible to ascertain the previous history of the patient's health where such appearances were observable; but it is probable, they were connected with the existence of previous diarrhœa. The following cases will illustrate this state of chronic irritation, on which is grafted acute inflammation producing dysentery.

Case 1st. Gunner Larkins, aged 28, and resident three years in India, was admitted into the Artillery hospital at Bombay, on the 4th of November 1825. He complained of having frequent ineffectual calls to stool, and of being able to evacuate nothing from his bowels but small quantities of bloody mucus; had severe tenesmus, accompanied by general tenderness of the abdomen, nauseous sour taste, white tongue, much thirst, heat of skin, and fulness of pulse. Was bled, on the first and second day of his admission, to 40 ozs. used the warm bath, had calomel with large doses of opium, followed by castor oil, and had leeches with a blister to the abdomen. Died on the 4th day after his admission in a convulsive fit, during the administration of an anodyne enema.

*Inspection.* — The cardiac extremity of the stomach internally presented a bright red vascularity, and the villous coat thoughout was covered by thick adhesive mucus. The contents of the stomach consisted of green bilious fluid and mucus; the small intestines were natural in appearance but distended by flatus; the valve of the cœcum was thickened and contracted. The large intestines were thickened; — the mucus coat ulcerated; and such parts of it as remained entire were of a slate colour and inflamed, but without any appearance of mortification. The liver was of a reddish purple colour, diversified on its surface by white spots. When cut into similar spots, were observable, and the inter-lobular tissue, between each, was of a bright red. The spleen was natural. The lungs were not fully collapsed and there was a great degree of congestion in the vessels of the pia mater.

In the above case the interlobular tissue was more vascular than the glandular secreting substance, and this diseased state may have been of contemporary origin with the chronic irritation of the sub-mucous tissue of the intestines, which produced the hypertrophy.

Case 2nd. John Johnson, seaman, aged 25, and just arrived from England, was admitted on the 25th December 1825 into the European General Hospital, and complained of dysenteric symptoms. He had pain increased by pressure at the epigastrium; frequent thin bloody stools passed with tenesmus; tenderness in the site of the colon; foul tongue; much thirst; scanty urine; and a pulse beating 120 but soft. He was bled from the arm to twenty ounces and fainted, had leeches and a blister applied to the abdomen, used the warm bath, took pills of calomel, ipecacuan and opium, and was purged with balsam of copaiva in large doses. He died on the sixth day after his admission, and the eleventh from the time when the symptoms became urgent.

*Inspection.* The mucous coat of the stomach near the cardiac extremity and along the whole of the great curvature, was of a dark red colour, and very vascular. A similar appearance was observable in the mucous coat of the duode-

num. The jejunum and ileum, which were distended with flatus, were healthy, excepting that ecchymosed spots were, here and there, observable on its villous covering: Several extensive ulcerations occupied the mucous coat of the colon, which was partly separated from the cellular tissue, and was floating loosely on the edge of the ulcers. A red adhesive matter was found on the surface of the ulcers, and adhered to the sub-mucous tissue. The whole of the large intestines were in a state of hypertrophy. The omentum was considerably wasted, shrivelled up towards the stomach and carried with it the colon. The right lobe of the liver was enlarged and softer than natural; its peritoneal covering also exhibited a mottled black and red appearance. The heart was pale and flaccid; and the lungs natural. Externally, the countenance was collapsed; the eyes sunk; and the body muscular.

It is scarcely possible that the degree of thickening which the large intestines exhibited in this case could have taken place in an illness of eleven days. The inflammatory appearances observed after death are of a somewhat congestive character, derived probably from the disproportionate muscular power of the heart to support the tone of the circulation in the capillary vessels of a large muscular man. The pulse, in the beginning of the disease, was frequent but soft; and one general bleeding of twenty ounces was attended by much faintness, indicating that the toleration of the system for bleeding was not great.

In the cases now quoted, the state of hyperœmia was not confined to the large intestines, which are the seat of dysentery, but extended to the stomach and liver; a very frequent, but not necessary complication of the disease, as we meet with it in this country. The following is an example of extensive disease in both small and large intestines, accompanied by a healthy state of the liver.

Case 3rd. Matthew Brown, aged 28, was admitted into the 17th dragoon hospital, at Kaira, in Gujerat, on the second May, 1818. He had copious discharges of blood and mucus, mixed with green matter and passed with much tenesmus; his stomach was irritable and ejected every thing taken into it; there was much pain about the umbilicus, unattended by any fulness of the abdomen; and these symptoms were attended by a feeling of much prostration and debility. He had been lately, while in Malwah, labouring under a similar disease, which detained him two months in hospital. The medical man, under whose charge he was, ordered grain doses of calomel every two hours, to be given along with an effervescing draught until his mouth became sore, a blister was applied to the abdomen, and emollient enemata used at intervals. This treatment removed, in some measure, the irritability of the stomach, but produced no alteration in the state of the intestinal evacuations, which continued green, bloody, and mucous, even after the mouth became fully affected with mercury. Latterly, the irritability of the stomach returned with increased violence, and nothing but wine and sago was retained till the period of his decease, which happened on the 26th May, or the twenty fifth day after his admission.

*Inspection.* The mucous coat of the cæcum, colon, and rectum was exten-

sively ulcerated accompanied by hypertrophy. At the pyloric orifice of the stomach the villous covering was abraded in several places; and in other parts, it was covered by a dark brown viscid matter, which firmly adhered to it. The small intestines, which were much inflated, were inflamed, and partly in a gangrenous state. The spleen were unusually large; and the liver was healthy.

In the succeeding case, where I had an opportunity of watching the progressive derangement of the patient's health, and of ascertaining, twelve months after an attack of simple dysentery, the state of the large intestines, it appeared, that the dysenteric affection was symptomatic of increasing disorganization and inflammation in the interlobular substance of the liver, and accompanied by disease in the sub-mucous tissue of the stomach.

Case 4th. Gunner George Thould, aged 22 years, and of dissipated habits, was admitted, on the 16th July 1822, into the Horse artillery hospital, at Kaira, and was suffering under an attack of diarrhœa; of which the symptoms were a purging of green mucous stools, some tenesmus, white tongue, and tenderness to the left of the umbilicus. Was discharged on the 26th and re-admitted after hard drinking on the 3rd September. At this time, he was labouring under an attack of acute hepatitis attended by bilious purging and tenesmus, was bled to forty ounces, and a blister applied, was freely purged and took calomel till its constitutional effects were produced. Discharged on the 18th of September and re-admitted on the 29th with purging of bloody mucus. The symptoms were those of phlogistic dysentery combined with hepatic affection, and febrile symptoms; was bled from the arm till he fainted, used mercurial inunction, took calomel with opium, until his mouth became sore, had anodyne enemata, and was purged with castor oil. Discharged cured on the 10th October. Continued his dissipated habits, and had diarrhœa in November; was affected, in May 1823, with hepatitis; and returned to hospital in June of the same year, with pain in the left breast, a tickling cough, spitting of blood, and looseness of his bowels. Said that the cause of his present attack was a fall from his horse. Died on the 24th of September.

*Inspection.* Previous to examination of the several organs in the abdomen, I tried to inject the liver, with red size injection from the vena porta, but failed. Minute injection was then thrown into the aorta, and the following were the appearances. It had passed into the inflamed spots observable on the mucous surface of the stomach, beneath which, it had an effused appearance, and occupied the cellular coat, which seemed the chief seat of the inflammation. The small intestines, which were filled with flatus, were bright red externally, and the large ones dark blue. The mucous coat of both seemed to be natural. The liver was prodigiously enlarged, occupied both hypochondria, and was of a buff colour. Throughout this buff coloured substance innumerable bright red points were seen, giving it a granular appearance. In the upper part of its right lobe a large cartilaginous tubercle was found, and, at this point there was an adhesion between it and the diaphragm. The right lung contained three or four pints of sero-purulent matter, and was the cause of death. In the right ventricle of the heart there was a semi-organized mass of adhesive matter.

Many facts, similar to those now detailed, might be quoted; but from the cases given in illustration, the following inferences may be made: 1st Active inflammation of the mucous membrane of the large intestine, producing symptoms of dysentery, frequently follows chronic irritation of the canal and thickening of the cellular coat. It proceeds rapidly to ulceration, and though, not necessarily complicated with disease in the liver, is frequently combined with hyperœmia in the interlobular substance of this viscus, constituting the hepatic variety of phlogistic dysentery. 2nd, Dysentery may exist where no marks of ulceration in the large intestines are observable after death; and the disease is frequently symptomatic of progressive disorganization in the structure of the liver. An imperfect outline of the phenomena of these various states of phlogistic and hepatic dysentery can only now be given; and I proceed to consider the nature of the cachectic variety.

In *cachectic dysentery*, the process of ulceration is connected with a more atonic state of inflammation than is observable in cases of the phlogistic kind. The aggregated, or solitary follicles of the intestines are enlarged, previous to the inflammation of the mucous membrane which terminates in their ulceration; and sometimes, tuberculous matter deposited in the sub-mucous tissue, produces inflammation and abscesses, which burst through it. In both instances, the ulcers are of an oavl or circular form as in plate II; and cream coloured tubercles, or small distinct abscess in the liver, complicate this variety of dysentery. The disease frequently proves very intractable, and is less under the dominion of medicine than the purely phlogistic and hepatic varieties. Frequently, one set of ulcerated follicles heal up, while others become inflamed and renew the symptoms of dysentery which have for a time disappeared. The following will illustrate this variety of disease.

Case 5th. Gunner George Geddes, aged 24 and just arrived from England, was admitted, into the artillery hospital, at Matoonga, on the 20th of November 1825. He complained of tenderness at the site of the colon, passed nothing but blood and mucus from his bowels, was suffering severely from thirst, griping, and tenesmus, had alternate chills and hot flushes, while his pulse usually numbered 86. He was bled, blistered, used mercurial inunction, with a warm bath, and took calomel with opium, till the gums became tender. The constitutional effect of mercury appeared to increase the irritability of the bowels and the frequency of the alvine evacuations. He died on the 26th following, and twentieth day from the time when he observed the first symptoms.

*Inspection.* The body was of natural appearance, but of slender make. The cœcum, which was internally much inflamed and ulcerated, had lost its

natural cohesion. In the transverse arch of the colon numerous small round ulcers were found; the sigmoid flexure was similarly ulcerated but in a less degree. The ileum where it joins the cæcum had a rough warty appearance from enlargement of its follicles. The glands of the mesentery were much enlarged; and the omentum, which was drawn up from the left side towards the cæcum adhered to this intestine and the abdominal parietes. The villous coat of the stomach, which had lost its natural cohesion, was easily torn by the nail and exhibited numerous purple spots, produced by effusion into the sub-mucous tissue. The liver anteriorly was of a reddish brown colour, and posteriorly, for several inches from its edge, was deep black. The lungs were fully collapsed but contained several white tubercles of a soft texture.

Case 6th Gunner Thomas Hoult aged 25.who had been three years in India, was admitted, into the artillery hospital at Motoonga, on the 10th of December 1825. He complained of dull pain at the umbilical region increased by pressure, had frequent ineffectual calls to stool, and passed nothing but bloody mucus. The thirst, griping and tenesmus which accompanied these symptoms were great; his pulse numbered 90 at admission, and increased after bleeding to 110; and febrile heat of skin with pain in his limbs was occasionally present. He was not benefitted by any remedy and died on the 5th day after his admission and the thirteenth from the time he observed the first symptoms.

*Inspection.* — The large intestines were thickened internally, and much ulcerated. The ulcerations, which were of a circular form, varied from a line to half an inch in diameter. The villous coat between each was of a light crimson colour. The glands of the mesentery were enlarged. Numerous grey tubercles, varying in size from a pea to a pins head, studded its substance, and were surrounded by deep purple discoloration, as represented in plate III. The villous coat of the stomach was of a light crimson colour and softened.

In chronic dysentery, which is the sequela of acute attacks, the mucous membrane is covered with patches of ulceration, there is a copious morbid secretion from the intervening unabraded portions, accompanied by hypertrophy of the coats and loss of power in the muscular fibres. As the cellular and muscular coats partake of the progressive ulceration, in these cases, the peritoneal covering frequently becomes affected, giving rise to a renewal of active inflammation, and effusion of adhesive matter between the serous surface of the different intestinal folds; where this is extending, whatever remedy therefore, diminishes the increased secretions from the inner part of the canal may sometimes increase the inflammation which has extended itself to the serous covering and, in the indication of treatment for this variety, it is necessary to bear these facts in mind. Whether the original attacks be of the phlogistic, or cachectic varieties, if the chronic form be of long standing, the secretory function of the liver becomes involved in the disease.

TREATMENT OF DYSENTERY. In reference to the facts just detailed on the pathology of this disease, we may deduce the principle that dysentery in its origin, is a highly inflammatory one, deriving much of its peculiar character from the nature of mucous surfaces, whose secretions are increased under states of hyperæmia. In the milder forms of it, this increase of secretion is calculated to wear out the vascularity of the membrane on which it depends, the mucous surface recovers its healthy condition, and a spontaneous cure is effected. But when repeated attacks of this kind have caused hypertrophy of the intestinal, coats and their natural secretory functions are consequently impaired — active inflammation supervening on such a state runs rapidly into ulceration; to prevent which is our chief object in the treatment of the disease.

In this as in other inflammations, the indication may be best fulfilled by the vigorous use of general and topical blood-letting, according to the type of disease, the constitution of the patient, and the character of the climate or season under which attacks take place. Sometimes, the epidemic constitution of the season may give rise to the congestive or typhoid varieties of dysentery, in which, a too free use of the lancet might not be followed by successful results; but where such causes do not contra-indicate its employment, it will be found the most successful method of stopping the progress of phlogistic and hepatic dysentery, by preventing those fearful abrasions of the mucous membranes, which detain the patient long under treatment and render his chances of recovery doubtful. Three tables of the efficacy of blood-letting, in diarrhœa and dysentery, among men of good constitutions, are here subjoined. The remarkable exemption from relapses which the patients had, and the rapid relief from the symptoms which followed the use of the lancet, are satisfactory proofs that, where ulceration has not commenced, and the tuberculous constitution does not oppose the success of this and of medicine in general, blood-letting should be considered the first and most important remedy in the cure of phlogistic and hepatic dysentery. The bleeding must be carried to fainting, and if had recourse to within six or eight days after the appearance of the symptoms, the irritability of the bowels subsides, the stools become less frequent, and tenderness of the abdomen is relieved, and the general circulation is equalized. In many cases of phlogistic dysentery, even after the ulcerative stage had commenced, I have frequently used the lancet with benefit; but the operation here requires discrimination, and must be cautiously employed, where the existence of the cachectic variety may be suspected, or the tone of the constitu-

tion has been exhausted by climate or intemperance The tolerance of the system for this remedy must be estimated from the greater or less quantity of blood drawn before fainting is produced.

The cases given in table 1st were of a very severe description, and happened, among the recruits of both battalions of Artillery, at Matoonga, while I was Surgeon of the Regiment. The station of Matoonga, as is well known, was a particularly unhealthy one to European troops, both on account of the bad accommodation they had there, and the wet and marshy situation of the neighbourhood. Bombay dysentery was, therefore, generally seen in its severest form, and the deleterious use of ardent spirit mixed with chilly juice and fermented toddy gave to the disease a most formidable character. The other two tables have been extracted from the records of the European General Hospital.

Immediately after the bleeding, the patient should take twelve or fifteen grains of ipecacuan, with fifty or sixty drops of laudanum in a draught; and the tenesmus and tormina are generally much relieved by using at the same time, emollient anodyne enemata and the warm bath. If the symptoms of yellow loaded tongue, tenderness and fulness at the epigastrium, accompanied by scanty secretion of hot urine, indicate the existence of hepatic plethora affecting the upper part of the intestinal canal, it will be proper to unite the ipecacuan with five or six grain doses of calomel, and to administer next morning a purgative of castor oil, or compound powder of jalap with rhubarb. This will generally remove the acrid bilious secretion, which excites the canal, and, when ulceration has not commenced, increases the tormina and tenesmus connected with the inflammatory state of the large intestines essential to the character of dysentery. If the tenderness of the abdomen continues, the stools be scanty and mucous but not serous, the pulse of good strength and equable, the general blood-letting may be repeated, followed by leeches to the abdomen, or the sacrum, according as the colon or rectum appears to be the seat of inflammation. If the latter be affected, relief from tenesmns will be obtained by the frequent use of the hip bath, or a suppository of opium and suet. The Ipecacuan and laudanum, if the dysentery be phlogistic and uncomplicated by hepatic plethora in the upper part of the canal, may be repeated alone; but if otherwise, it should be accompanied by calomel, and followed by purgatives until the erethism of the liver has subsided, and the whole of the morbid secretions have been removed. Where the stomach is irritable and partakes in the inflammation of the large intestines it may be advisable to give the ipecacuan with solid opium in pills.

It is scarcely possible in a short sketch of this kind to enter on the consideration of the efficacy of particular remedies; but I may here remark that, after extensive experience in the use of Ipecacuan, I consider it the most important remedy in the cure of the phlogistic variety, next to the antiphlogistic measures of bleeding and blistering. It generally creates nausea and free perspiration, allays the tormina and tenesmus for several hours after its administration, and where it causes vomiting, relieves the upper part of the canal from the irritation of the acrid bile which accompanies the hepatic variety. It may be sometimes necessary, after full antiphlogistic measures have been taken, to produce the constitutional effects of mercury, but the practice will be found generally more successful among men sometime resident in tropical climates, than among those recently arrived from Europe. In inflammatory habits where mercury has been carried to its constitutional effects I have often observed colonitis produced by the medicine; and cases are frequently sent to the European General Hospital, where it is necessary to bleed the patient after being salivated on board of ship for dysentery, without blood-letting having been premised.

The following cases will illustrate the practice now recommended in phlogistic and hepatic dysentery.

Case 1st. Gunner Thomas Jones, aged 26, was admitted into the Artillery hospital on the 7th December 1825, complained of the usual symptoms of inflammatory dysentery; took some castor oil at admission, which purged him freely; and produced temporary relief from irritation of his bowels. Was bled to twenty five ounces on the 8th passed a bad night and took the following day Ipecacuan with laudanum. Had another bad night, passed slimy stools mixed with dark green matter, and complained of uneasiness on the edge of the ribs of the right hypochondrium. Was purged again with castor oil, used anodyne enemata, and was much relieved. Continued the Ipecacuan and laudanum on the 11th, was worse on the 12th; was bled again from the arm to thirty ounces, and experienced almost complete exemption from abdominal tenderness. From this date calomel and opium were given till tenderness of the gums and some salivation followed. Was discharged cured on the twentieth day.

Case 2d. Gunner James Christy, aged 23, was admitted into the Hospital at Matoonga, on the 20th of December 1825, was labouring under symptoms of the milder kind of phlogistic dysentery, and was passing slimy yellow stools mixed with blood. Took castor oil which purged him, but without relief; was bled to twenty five ounces and took a scruple of calomel, but experienced no diminution of the symptoms. Again bled to twenty five ounces; took calomel with tartar emetic and opium, and had emollient anodyne enemata administered. Next day was considerably relieved and complained less of tenesmus; but as his tongue was yellow and loaded and he suffered from excessive thirst; an ipecacuan emetic was administered, followed next morning by castor oil; and

though he complained of tenderness above the right groin in the site of the cœcum, the stools were passed without tenesmus. Pills of calomel and opium were repeated, and castor oil given as a purgative. Was discharged cured on the twelfth day after his admission.

In the above instances the disease was of the phlogisto-hepatic variety; and the apparently hurtful administration of ipecacuan and laudanum alone giving rise to the necessity of subsequently employing calomel, points out the impropriety of trusting to this remedy except in cases of uncomplicated phlogistic dysentery.

In our treatment of the cachectic dysentery, however acute the symptoms may be, it is advisable to be sparing in the employment of general blood-letting, and to trust the cure to the free application of leeches, blistering of the abdomen, ipecacuan and opium in pills, the use of the warm bath, and the administration of anodyne enemata. Purgatives must be used with caution, and those employed to carry off diseased secretions, should be of the mildest kind, such as castor oil, or sulphur with cream of tartar which has been recommended by high authority, and has been found from my experience to be extremely useful in allaying intestinal irritability. Where the habit is spare, the constitution debilitated by residence in a warm climate, and the stools consist of dark blood with mucus, the subnitrate of bismuth, or sulphate of copper, combined with opium, is a remedy well suited to fulfil the indications of cure. A large warming plaister should be kept constantly on the abdomen after the application of leeches, and the diet limited to articles of a farinaceous kind. But here change of climate and a sea voyage is of the first consequence for the recovery of the patient, and where circumstances permit of having recourse to the trial, the practice ought seldom to be neglected. The following cases will illustrate the treatment of this variety of dysentery.

Gunner James ———, aged 26, and a person of dissipated habits was admitted on the 17th March 1836 into the European General Hospital. Had previously suffered at different times from fever, and stated that he had been unwell fourteen days previous to admission. Was first attacked with fever of an irregular intermittent type, to which succeeded symptoms of dysentery, which were frequent purging of mucous stools, great tenesmus and tenderness in the hypogastric region. His tongue, which was white and loaded, was tremulous, his skin covered with clammy perspiration, his abdomen collapsed, and his pulse 104 and small. The principal treatment consisted of frequent leeching of the sacrum and anus, a warm bath nightly with pills of calomel, opium and ipecacuan, blisters to the abdomen, and purging by sulphur, which relieved the griping and allayed the irritability of his bowels. The calomel was only occasionally given with the ipecacuan and opium and seemed not essential to the cure. Was discharged from hospital after a month and eight days; had a

relapse in the middle of May, when he was again admitted into hospital, and treated nearly in the same manner. Was discharged cured on the 5th of July, and has since continued at his duty as a saddler in the Castle, suffering occasionally from fever and pain in the cardiac region; he is now in tolerable health, looks sallow, and has abandoned his drunken habits.

It is unnecessary to multiply examples, as many similar to the above might be given; and I now conclude this sketch of a formidable malady with a few short observations on its chronic variety.

Most cases of chronic dysentery, even when not connected in their origin with deranged function of the liver, seem to involve this viscus in the general derangement of the alimentary canal. It is here that the constitutional effect of mercury produced by inunction combined with the use of tonics, mercury, and chalk, with dovers powder, seems of the greatest utility. Frequent leeching of the abdomen to reduce urgent symptoms and prevent extensive inflammation among the intestines. Of tonics combined with opium, I have employed a variety; but after numerous trials, I am disposed to give preference to a combination of sulphate of quinine with mercury and chalk and dovers powder. This, which maintains the tone of the stomach, appears to give healthy action to the skin, keeps in check the progress of hectic symptoms and diminishes the quantity of serous discharge. The addition of a few grains of powdered catechu seems sometimes useful, though I have occasionally known that it increased the irritability of the bowels.

Such is the imperfect outline of the varieties of dysentery which I have endeavoured to sketch; and I claim no greater value for the facts than they intrinsically merit. I hope they may lead to further observation in this disease and discrimination in the adoption of remedial measures for its cure.

Table I.—*Return of Dysenteric cases among the Recruits of the Bombay Artillery, who arrived from England and were stationed at Matoonga in* 1825.

| Date of admission. | Names. | Years of Age. | Diseases. | No. of general bleedings. | No. of ounces taken. | No. of local bleedings. | No. of ounces taken. | No. of days in Hospital. | |
|---|---|---|---|---|---|---|---|---|---|
| 1826 | | | | | | | | | |
| Sept. 7 | Mathew Galvin.... | 25 | Acute Dysentery | 1 | 20 | " | " | 19 | |
| Nov. 25 | John Williamson. | 31 | ditto | 1 | 25 | " | " | 14 | sive fit. |
| " 4 | James Larkins .... | " | ditto | 2 | 40 | 1 | 8 | 3 | Died in convul- |
| " 20 | George Geddes .... | 24 | ditto | 2 | 50 | 1 | 7 | 6 | Died exhausted. |
| " 26 | Margaret Davis.... | " | ditto | 2 | 50 | 1 | 5 | 19 | |
| " 28 | Philip Davis..... | " | ditto | 1 | 24 | 1 | 6 | 9 | |
| " 30 | Morris Neville..... | 24 | ditto | 1 | 26 | " | " | 9 | |
| " 26 | John Tomlinson... | 22 | ditto | 1 | 25 | " | " | 14 | |
| " 20 | William Thompson | 21 | ditto | 1 | 20 | " | " | 23 | |
| Dec. 4 | Peter Cuffield ..... | 18 | ditto | 2 | 35 | " | " | 18 | |
| " 7 | Thomas Jones..... | " | ditto | 2 | 55 | 1 | 5 | 20 | Died and the |
| " 10 | Thomas Hault .... | 25 | ditto | 2 | 44 | " | " | 5 | liver was found |
| " 15 | Stephen Crawford . | 20 | ditto | 1 | 20 | " | " | 16 | full of tubercles. |
| " 16 | Robert Ascomb .... | " | ditto | 1 | 20 | " | " | 17 | This was a |
| " 6 | Edward Fairman .. | 21 | ditto | 3 | 70 | 1 | 10 | " | case of dysent- |
| " 20 | James Austy..... | " | ditto | 2 | 50 | 1 | 4 | 12 | ery combined |
| " | John Pugh..... | " | ditto | 1 | 25 | " | " | 9 | with inflamma- |
| " 6 | Henry Bannister... | 20 | ditto | 1 | 24 | " | " | 31 | tion of the liver. |
| " 9 | Henry Plaine ..... | 23 | ditto | 1 | 25 | " | " | 29 | |
| " 31 | John Faulkner..... | " | ditto | 1 | 26 | " | " | 9 | |

Table II.—*Return of cases of H. Ms. 3d Foot, or Buffs, treated in the European General Hospital of Bombay in* 1827.

| Date of admission. | Names. | Diseases. | No. of general Bleedings. | No. of ounces abstracted. | No. of times bled locally. | No. of ounces abstracted. | No. of days in Hospital. | No. of days unwell before admission. | No. of relapses |
|---|---|---|---|---|---|---|---|---|---|
| June 29 | James Garret ..... | Diarrhœa. | " | " | 2 | 16 | 13 | 14 | " |
| July 10 | Dennis Murphy ..... | ditto | 1 | 32 | 1 | 20 | 43 | 3 | " |
| " 3 | Mrs. Murphy ..... | ditto | " | " | " | " | 19 | 1 | " |
| June 27 | William Branzley ..... | ditto | 1 | 32 | " | " | 13 | 5 | " |
| " 27 | Joseph Woodly ..... | ditto | 1 | 40 | " | " | 13 | 3 | " |
| July 3 | John Stewart ..... ..... | ditto | 1 | 20 | " | " | 11 | 4 | " |
| " 3 | William Palmer ..... | ditto | 1 | 24 | 1 | 20 | 11 | 2 | " |
| June 19 | Thomas Riley ..... .... | Dysentery. | 1 | 32 | " | " | 19 | 5 | " |
| July 1 | James Dayman ..... | ditto | 1 | 48 | 1 | 6 | 13 | 5 | " |
| " 1 | Charles Thompson ..... | ditto | 1 | 50 | 1 | 20 | 15 | 5 | " |
| " 1 | Daniel Watson ..... | ditto | 2 | 64 | " | " | 16 | 3 | " |
| June 20 | Nicholas Murphy..... | ditto | " | " | " | " | 27 | 5 | " |
| July 14 | Michael Carrol ..... ..... | ditto | 1 | 48 | " | " | 6 | 1 | " |
| " 14 | Mr. Nutts..... | ditto | 1 | 48 | " | " | 5 | 7 | " |
| June 23 | James Whitehead ..... | ditto | 2 | 64 | " | " | 23 | 4 | " |
| July 11 | William Baird..... | ditto | 3 | 80 | 1 | 8 | 13 | 3 | " |
| " 17 | Michael Doran ..... | ditto | 1 | 50 | " | " | 36 | 1 | " |
| " 10 | Peter Ferry..... | ditto | 1 | 18 | 1 | 6 | 36 | 2 | " |
| " 19 | Mrs. Pollock ..... | ditto | 1 | 20 | " | " | 5 | 5 | " |

Table III. — *Return of Sick of H. M. 3d Foot, or Buffs, who embarked Convalescent in the Milford, Bombay 25 July, 1827.*

| Date of admission. | Names. | Diseases. | No. of times bled generally. | No. of ounces abstracted. | No. of times bled locally. | No. of ounces abstracted. | No. of days in Hospital. | No. of days unwell before admission. | No. of relapses |
|---|---|---|---|---|---|---|---|---|---|
| July 22 | William Halfpenny | Diarrhœa. | 1 | 24 | " | " | 4 | 3 | " |
| " 11 | Henry Mair | ditto | 1 | 24 | " | " | 14 | 4 | " |
| " 18 | Michael Regan | ditto | 1 | 32 | " | " | 7 | 1 | " |
| " 23 | Joseph Grievis | ditto | 1 | 20 | 1 | 6 | 10 | 1 | " |
| June 30 | Patrick Reynolds | ditto | 2 | 66 | " | " | 26 | 3 | " |
| " 16 | William Grey | Dysentery. | 3 | 120 | " | " | 39 | 3 | " |
| July 4 | Henry Eveling | ditto | 1 | 30 | 2 | 28 | 21 | 8 | " |
| " 8 | Robert Brown | ditto | " | " | 1 | 6 | 36 | 2 | " |
| " 21 | Thomas Hawkins | ditto | 1 | 32 | " | " | 5 | 7 | " |
| " 13 | James Tod | ditto | 2 | 64 | " | " | 13 | 4 | " |
| " 22 | George Egan | ditto | 1 | 32 | " | " | 4 | 3 | " |
| " 16 | John Adams | ditto | 1 | 32 | 1 | 6 | 30 | 5 | " |
| " 14 | Thomas Paton | ditto | 1 | 48 | 2 | 12 | 9 | 5 | " |
| " 13 | Thomas Johnson | ditto | " | " | " | " | 13 | " | " |

## Article VIII.

### *Annual Report of the Native General Hospital at Bombay, for the year* 1839.

Presented by the Medical Board, May 1840.

General Observations. The patients admitted during 1839, exceed those admitted during 1838, by 341. The proportion of casualties, however, is greater, and comes up to $16\frac{9}{8}$ per cent; a lesser amount than in any former year excepting 1838, in which the mortality was only about $14\frac{9}{25}$ per cent. The cause of this, has been in great measure, the necessity which frequently existed, for making periodical clearances of the hospital; when, from the numbers of sick applying for admission, the convalescents and persons who were more slightly unwell have been discharged to give room to severe cases, and in like manner, cases of disease which would have been admitted, had there been room in hospital, have been furnished with medicines and desired to attend as in dispensaries. There has consequently been a greater amount of sick "dangerously ill" in proportion to the total inmates of the hospital than in former years; and it will be seen that the increase in the present, over the past year, is for the most part in diseases of a grave nature—Cholera, Cachexia, Fevers, Inflammations, Dropsical affections, Fractures, Phthisis Pulmonalis, Small Pox, Ulcers and Wounds.

The degree of mortality arises, as has been explained in former reports, from the immense proportion of cases of extreme destitution that are admitted, for whom relief of suffering, but not cure of disease, can be looked for. Exclusive of those, there were twenty-five who died soon after admission, without receiving medical treatment; and whose diseases are believed to have been as follows.

Asthma, one; Cholera, one; Cachexia or Diarrhœa, seven; Dropsical affections, twelve; Dysentery, one; Fevers, twelve; Hepatic affections, three; Cephalic inflammation, one; Thoracic inflammation, one; Abdominal inflammation, two; Phthisis Pulmonalis, one; Small pox, one; Gangrene, two; Tetanus, two. Total, twenty-five.

There were also of Cachexia, eight; Diarrhœa, two; Dysentery,

four; Hepatic affections, three; Cephalic inflammations, two; Thoracic, four; Abdominal, three; Phthisis Pulmonalis, two; Small Pox, two; Tetanus, three. In all, thirty-three cases who died the day after admission.

As a detail of the mode of treating most of the diseases has been forwarded in former reports, I shall merely subjoin a return of the admissions, discharges and deaths for the year, and then make a few remarks on some of the classes.

*Annual Return of Sick of the Native General Hospital, from the 1st of January, to the 31st of December,* 1839.

| Diseases. | Remained. | Admitted. | Total. | Discharged. | Died. | Remaining. |
|---|---|---|---|---|---|---|
| Apoplexy | .. | 2 | 2 | .. | 2 | .. |
| Asthma | .. | 4 | 4 | 4 | .. | .. |
| Cholera, Biliosa | 1 | 17 | 18 | 9 | 9 | .. |
| ———, Spasmodica | .. | 20 | 20 | 6 | 14 | .. |
| Cutaneous Diseases | 8 | 108 | 116 | 106 | 3 | 7 |
| Cachexia | 3 | 72 | 75 | 22 | 53 | .. |
| Diarrhœa | .. | 22 | 22 | 11 | 9 | 2 |
| Dropsical Affections | 2 | 49 | 51 | 23 | 27 | 1 |
| Dislocations and Sprains | .. | 9 | 9 | 8 | .. | 1 |
| Delirium Tremens | .. | 9 | 9 | 8 | .. | 1 |
| Dracunculus | 1 | 21 | 22 | 18 | .. | 4 |
| Dysentery | 6 | 72 | 78 | 39 | 35 | 4 |
| Fractures | 4 | 24 | 28 | 23 | 3 | 2 |
| Fevers — Remittent | 1 | 87 | 88 | 68 | 16 | 4 |
| Fevers — Intermittent | 3 | 118 | 121 | 116 | 1 | 4 |
| Gonorrhœa | 3 | 31 | 34 | 32 | .. | 2 |
| Hepatic Affections, Acute | .. | 14 | 14 | 6 | 4 | 4 |
| ———, Chronic | 1 | 10 | 11 | 2 | 9 | .. |
| Inflammations, External | 2 | 58 | 60 | 48 | 6 | 6 |
| ———, Cephalic | .. | 3 | 3 | 1 | 2 | .. |
| ———, Thoracic | 2 | 49 | 51 | 41 | 9 | 1 |
| ———, Abdominal | 1 | 16 | 17 | 10 | 7 | .. |
| Affections of the urinary organs | .. | 6 | 6 | 6 | .. | .. |
| Mania | 1 | 3 | 4 | 4 | .. | .. |
| Ophthalmic Affections, Acute | 1 | 2 | 3 | 3 | .. | .. |
| ———, Chronic | 2 | 21 | 23 | 19 | 1 | 3 |
| Phthisis Pulmonalis | 1 | 47 | 48 | 14 | 34 | .. |
| Rheumatism | 14 | 180 | 194 | 172 | 6 | 16 |
| Spleen, Disease of | .. | 7 | 7 | 7 | .. | .. |
| Syphilitic Affections, Primary | 6 | 123 | 129 | 113 | 4 | 12 |
| ———, Secondary | .. | 47 | 47 | 37 | 1 | 9 |
| Small Pox | .. | 34 | 34 | 20 | 14 | .. |
| Scurvy | .. | 16 | 16 | 11 | 5 | .. |
| Ulcers | 9 | 105 | 114 | 88 | 11 | 15 |
| Wounds | 8 | 213 | 221 | 198 | 7 | 16 |
| Other diseases | 11 | 161 | 172 | 142 | 24 | 6 |
| Total | 91 | 2780 | 1871 | 1435 | 316 | 120 |

*Cutaneous Diseases.* The three fatal cases have been from Lepra Græcorum occurring in old Lepers who sunk under the Diarrhœa which so generally winds up this loathsome disease. — Acetate of lead and sulphate of copper in large doses and combined with large

opiates have been the only remedies from which, even temporary benefit has been obtained in these cases.

*Dislocations.*—Two of shoulder; two of ancle; one of hip; four of wrist.

*Delirium Tremens.* One Parsee; three Musulmans; one Christian woman; one Portuguese; four Christian men. (Portuguese); All cured by opiates, diffusible stimuli and in some cases the cold affusion. In the case now under treatment, leeches to the head have been found necessary.

| | Cured. | Died. |
|---|---|---|
| *Fractures.*—thigh, simple | 2 | 0 |
| —both bones of leg, simple | 7 | 0 |
| —"——"—— comminuted | 2 | 0 |
| —"——"—— compound | 2 | 2 |
| —the Fibula | 1 | 0 |
| —Patella, simple | 1 | 0 |
| —Clavicle, comminuted | 1 | 0 |
| —Humerus, simple | 1 | 0 |
| —Ulna | 1 | 0 |
| —Carpal bones compound and attended by Tetanus | 2 | 0 |
| —Ribs. | 2 | 0 |
| —Lower jaw-bone compound | 0 | 1 |
| | 22 | 3 |

Of the fatal cases, one was a compound fracture of the leg in an old woman, occasioned by a cart wheel passsing over it immediately above the instep. She was not brought to the hospital till many hours after the accident had occurred, and died eight hours after admission, notwithstanding the assiduous exhibition of diffusible stimuli and opiates &c. Another similar injury from a similar cause in a Brahmin, terminated fatally from tetanus on the twelfth day after admission and the third from the invasion of the disease. The third occurred in an old man who fell from a great height and fractured the lower jaw into numerous pieces, some of which were removed; notwithstanding this, and the occurrence of copious suppuration at several points, perfect union was obtained, and he quitted hospital well; but returned after a time, broken down by dissipation and hard drinking, and ultimately sunk in hospital from fever depen-

dent on extensive suppuration in both ears. Body was not allowed to be opened.

*Fevers' Intermittent.* Ninety four cases of quotidian and twenty-four of the tertian type. Of the former, one fatal in an old man, a free liver who had been often in hospital for the cure of rheumatic and febrile affections complicated with pulmonary disease. A portion of narcotine procured (I believe) from Bengal, had a fair trial in thirteen of those cases, viz. five tertian and eight of the quotidian type and only succeeded in three — one tertian and two quotidian. The remedy was given in an acid solution in ten grain doses at intervals of two hours for four times; in all of these cases, it even, where it succeeeded, produced giddiness, nausea often followed by vomiting and great gastric uneasiness; and difficulty was often experienced in inducing patients to swallow this remedy who took quinine most readily and without complaint. I think, I noticed that even in the three successful cases, anorexia was present to a greater extent, and continued for a longer period than seemed likely to have been the case, had narcotine not been used for their cure; ten grain doses were had recourse to, from smaller having been found quite inefficacious. In three cases I gave the medicine in fifteen grain doses, but in all, the first dose was followed by great uneasiness at stomach and the second was invariably followed by vomiting. Quinine cured all those cases, but in two of them, not till after a long period, and only in large doses (ten grains in each). I may remark that the narcotine was tried by Dr. OShaughnessy's test, and found by it, to be perfect.

| *Inflammations external.* | Cured. | Died. |
|---|---|---|
| —Throat | 5 | ,, |
| —Glands of Neck | 5 | ,, |
| —"——— of Neck | ,, | 1 |
| —Hand | 1 | ,, |
| —Female breast | 2 | ,, |
| —Glands of Groin | 9 | ,, |
| —Testis | 3 | ,, |
| —Scrotum | ,, | 1 |
| —Buttock | 1 | 1 |
| —Hip joint | ,, | 1 |
| —Thigh | 2 | ,, |
| —Knee | 10 | 2 |
| —Leg | 5 | ,, |
| —Ankle | 9 | ,, |
| | 52 | 6 |

Excepting in the case of the inflamed scrotum which speedily terminated by sloughing, all the other fatal cases were from long continued inflammation having ended in suppuration; and were accompanied by hectic and such general derangement of the system as to preclude a hope of cure. Many of the other cases were exceedingly violent and called for full general and frequent topical bleeding and nauseants &c. &c.

*Inflammations Abdominal.* Excepting one of colonitis which, notwithstanding the most active treatment, proved fatal by mortification supervening thirty six hours after admission; all the other cases six in number, were of gastro-enteritis of which four died within three days after receipt into hospital. All the successful cases were of this form of disease and of great obstinacy.

*Phthisis Pulmonalis.* The number has been unusually great and ought even to have been greater, as several of the cases borne as Cachexia and Thoracic inflammation ought to have been included under this head.

*Ophthalmia chronica* and *Rheumatism.* The fatal cases of these diseases occurred in cachectic and broken constitutions. Of the latter disease there have been, acute, sixty-four; chronic, one-hundred and two; syphilitic, fourteen. Total 180.

*Small Pox.* Cases of this disease occurring in parties unprotected by vaccination of unusually severe form, have been admitted in every month of the past year, excepting in January, February and October. The greatest number of admissions and the smallest mortality occurred in March, when many recently attacked were admitted into hospital; but in the other months the cases received have been of the worst possible description, and always at advanced periods of the disease. A confluent rash, and great affection of the throat and head in most, and a copious but imperfectly developed rash in others, have been the most marked features of all the cases.

*Scurvy.* Of the fatal cases, two in whom the disease was combined with general dropsy died on the fourth day after admission. A third, an African died suddenly from syncope. The other two were Lascars who had been long ill and sunk from inanition. Both had long suffered from diarrhœa which was readily checked by large doses of plumbi acetas (six grains,) combined with full opiates;

but notwithstanding this, they did not rally nor improve under any modification of diet or regimen.

| | | Cured | Died. |
|---|---|---|---|
| *Ulcers.* | Simple | 33 | 0 |
| | Indolent | 13 | 0 |
| | Sloughing | 22 | 6 |
| | Irritable | 27 | 5 |
| | | 94 | 11 |

Of these, two died from sloughing of the labia; one from sloughing of the groin and abdominal parietes; one from sloughing of the hand which he declined to have amputated; and two from superficial sloughing of the leg, in which diarrhœa supervened and carried them off. Of the others, one had extensive ulceration of the parietes of the chest with caries of the ribs; other two broken down by syphilis and drinking had numerous ulcers on the lower extremities; a fourth a phthisical patient had ulceration of the labia and extremities; and a fifth who had extensive disease of the hand, and had declined to have it amputated sunk so low from repeated oozing of blood as to render it unadvisable to perform the operation, when he at last consented to have it done.

Creosote as a local application was extensively used in the cases of sloughing ulcer, and in many with good effect, but it did not quite come up to the expectations which had been formed of its efficacy. It is however most useful in counteracting the disagreeable fætor of many of these sores.

Two amputations of the leg below the knee; one of the great toe; one of the forearm; and two of the fingers on account of ulcers, terminated favourably. In one case the hand sloughed off at the wrist and the man left hospital with a well covered stump, the result of careful dressing unaided by the knife.

| | | Cured | Died. |
|---|---|---|---|
| Wounds. | Injuries of the head | 2 | 2 |
| | Penetrating wound of abdomen | 0 | 1 |
| | Penetrating wound of thorax and abdomen with numerous incised wounds of head, body and limbs | 1 | 0 |
| | Punctured wounds | 6 | 1 |
| | Gun shot wounds | 2 | 0 |
| | Incised wounds | 28 | 0 |

| | | |
|---|---|---|
| *Lacerated wounds* by blows from clubs, bottles and stones &c. | 28 | 1 |
| *Lacerated wounds* combined with fractured jaw | 2 | 0 |
| By buggy and cart wheels | 26 | 0 |
| By falls from heights | 8 | 0 |
| Parties knocked down and run over by buggies, horses &c. &c. | 26 | 1 |
| Beaten by clubs &c. | 55 | 1 |
| Falls from heights | 14 | 0 |
| From articles falling on them | 8 | 0 |
| | 206 | 7 |

Both fatal cases of injuries of the head were from fractured skull attended by laceration of the brain and hœmorrhage; both were caused by the parties being knocked down by horses going at speed, and both died soon after admission into hospital. The two cures were likewise cases of fractured skull. One of those, in addition, had her nose and a great portion of the upper lip removed, and an extensive incised wound on the forehead; from these she was long in extreme danger but ultimately left hospital quite well.

*Penetrating wound of Abdomen* believed to have been a case of suicide. A transverse wound of the epigastric and right hypochondriac regions six inches in length had been made, through which the omentum and whole arch of the colon had been dragged, and the latter viscus completely cut across in two places with an interval of about eight inches between, and the severed portion irregularly cut in two parts through both sides of the canal. Omentum much lacerated and torn. Abdominal extremities of the severed gut could not be found—in this state the man lived thirty hours and was perfectly sensible to the last.

*The penetrating wounds of the thorax and abdomen* occurred in the wife of the suicide just spoken of, and were inflicted by him. Both blood and air escaped from the wounds of the chest, and a portion of the omentum (which was removed) had escaped from the abdomen; in addition she had a long deep wound at the angle of the jaw, her mouth laid open by another of the cheek, and eight other deep flesh wounds of the trunk and extremities; and yet, has never had after the first thirty six hours an unfavourable symptom and has

merely required the exhibition of anodynes, antimonials, and laxatives.

The fatal punctured wound was from the horn of a deer above the the pubes; it did not penetrate the parietes of the abdomen but was attended by high febrile excitement, for which, repeated general and local blood-letting, antimonials and purgatives, &c. were used with excellent effect. After the lapse of six days, considerable pain was felt in the upper part of the thigh where an incision was made, and issue given to a quantity of bloody sanies with sloughs and air, &c. Much relief experienced in consequence, but though the discharge soon ceased, he did not recover either spirits or strength, and ultimately sunk under diarrhœa and low typhoid symptoms, &c. the 22d day after admission. Body removed by his friends.

The fatal lacerated wound occurred in a labourer of the Mint, who died suddenly from disease of the heart.

One fatal case of contusion occurred in a very old man, who was thrown down by a buggy and who died on the fifth day, from no marked complaint, but apparently as much from old age as from any other cause.

The other fatal case arose from rupture of the spleen in a young man who had been beaten about the abdomen by thieves with their fists. In this case the spleen was of large size, of soft and very fragile texture.

Many of the incised, and lacerated wounds were very extensive and severe, but they and all the others did well, and require no particular notice.

| | | Cured. | Died. |
|---|---|---|---|
| Other Diseases. | Abscess. | 11 | 3 |
| | Gangrene | 3 | 2 |
| | Injury of the spine. | 0 | 1 |
| | Infirmity from old age. | 7 | 8 |
| | Palsy | 14 | 2 |
| | Poisoning | 17 | 1 |
| | Ptyalism from mercury. | 12 | 2 |
| | Tetanus | 3 | 5 |
| | Burns and scalds. | 6 | 0 |
| | Colica. | 6 | 0 |
| | Constipation. | 8 | 0 |
| | Contracted joints | 4 | 0 |
| | Debility | 9 | 0 |
| | Drunkeness | 10 | 0 |
| | Hæmorrhoids | 10 | 0 |

| | | |
|---|---|---|
| Hernia Inguinalis | 3 | 0 |
| Intestinal worms | 6 | 0 |
| Rachitis | 1 | 0 |
| Rubeola | 3 | 0 |
| Scrofula | 4 | 0 |
| | 137 | 24 |

The cases of abscess ought to have been borne among external inflammations. They were for the most part extensive and situated about the neck, axilla, buttocks, and thighs. The fatal cases occurred in men completely broken down by disease and long suffering and but little could be done for them, beyond supporting their strength, and administering anodynes. Of these, one was a case of abscess of the neck, and two were of the buttocks.

*Gangrene.* One case, of right lower extremity from guinea worm proved fatal on the second day, another of the right upper extremity from the same cause on the fourth day.

*Injury of the Spine.* A case of fracture and displacement of the lumbar vertebræ in a Seedee, caused by a large bale of cotton falling on him when in the sitting posture and pressing him down on his forehead to the deck. Instant paralysis of the bladder and lower extremities occurred, and he sunk within nine weeks from the accident. At first, he had little or no pain any where, but always expressed himself easier after the application of leeches and cold &c., to the injury. At the end of the seventh week he became delirious and complained much of pain in his loins, this was often relieved by leeching and cold, but the delirium was always present to a greater or less extent, and he died complaining of his lower extremities being severed from his body. Inspection not permitted by his friends.

*Paralysis.* Cured or relieved, hemiplegia ten; paraplegia four. Nux vomica and strychnine have been found as efficacious as in the cases of 1838, detailed in last annual report. One fatal case of hemiplegia died soon after admission into hospital. The other occurred in a man of dissipated habits, a drunkard, and opium and ghanja eater. At the time of admission in addition to the paralytic symptoms, he was affected with delirium tremens; this was removed by

anodynes, antimonials and purgatives, and he afterwards took nux vomica for a very long period, in doses gradually increased to as great an extent as could be borne; but, it was often intermitted on account of the excitement produced and the degree of muscular pain and twitching that it invariably, after a time, caused; and was ultimately, abandoned in consequence of its failing to produce any permanent good effect on the loss of power in the limb. He soon after gradually declined in flesh and strength, notwithstanding, the administration of diffusible stimuli and tonics and died of debility induced by utter loss of appetite.

*Poisoning.* The fatal case occurred half an hour after admission into hospital, and by account seven hours after taking the poison. About a scruple of white oxide of arsenic was removed by the stomach pump. The others were cases of the administration of *datura*, &c., but they and those of drunkenness require no further notice.

*Ptyalism from mercury.* All admitted from the bazar. The fatal cases occurred from extensive sloughing of the face. One on the second and the other on the sixth day after admission.

*Tetanus.* Besides the three cases already spoken of, another proved fatal on the third day after admission; in this case there was extensive sloughing of the foot from dracunculus. The fifth, a case of twelve days standing, caused by a lacerated wound of the foot, proved fatal on the seventh day after admission. In these cases, as well as in those which have been cured, blisters to the spine, purgatives and calomel and opium in large and repeated doses have been the means employed. The three cures were cases of traumatic tetanus, and in all, salivation was produced, after which the symptoms gradually yielded. A case of severe opisthotonos from guinea worm, which had appeared at three different parts in the soles of the feet, and legs, is now under cure. The patient was admitted on the 4th December, fifteen days after the first appearance of the tetanic symptoms and in a state which seemed to preclude the possibility of his living many hours. A strong cathartic was given on admission followed immediately afterwards by a five minim dose of hydrocyanic acid combined with tinct: opii: ʒii. This seemed to give relief and was soon repeated in an increased dose, and he at length took ten minims of the acid with ʒii of tinct: opii: four times a day with occasional purgatives, with the most marked benefit. He can now 1st January

walk a little, has no rigidity of limbs, and only feels very weak. The acid has been intermitted, and he now only takes half a drachm of tinct: opii : twice daily.

*Burns and scalds.* One of the latter and five of the former all from gunpowder or the actual contact of fire. In the scald the application of cotton was of use. The other cases require no notice.

In one of those of intestinal worms, 122 lumbrici, of lengths varying from four to six inches, were passed at once in a mass by stool. About 180 were passed by this individual at different times.

NUMBER OF SICK.

| | |
|---|---|
| Remained 31st December 1838 | 91 |
| Admitted in 1839 | 1780 |
| Discharged | 1435 |
| Died in Hospital | 316 |
| Remained 31st December 1839 | 120 |
| Average daily number of sick for the year | 119½ |
| Average number of convalescents | none |
| Died without receiving medical treatment | 25 |

## Article IX.

*Annual Report of the Diseases in the Jail and Detachment Hospitals at Rutnagherry in the Southern Concan, from the 1st January, to the 31st December*, 1839. By John Bourchier, M. D.

Presented by the Medical Board, May 1840.

It is unnecessary to preface this report by a repetition of what has been already told regarding the climate and topography of Rutnagherry by my predecessor and myself — very full information having been given on these points. It will be sufficient to notice any peculiarities which may have distinguished the season of the year just concluded; and what chiefly claims attention, in a medical point of view, is its unusually heavy moonsoon which, also, commenced much earlier than usual, by a heavy fall of rain on the 18th of May. The following register of the pluviometer for the years 1838 and 1839, sufficiently shows the comparatively large quantity of rain which fell in the latter.

| Months. | 1838. | | 1839. | |
|---|---|---|---|---|
| | Inches. | Cents. | Inches. | Cents. |
| May..... | 0 | 0 | 15 | 04 |
| June ..... | 32 | 87 | 33 | 54 |
| July..... | 6 | 39 | 33 | 08 |
| August.... | 11 | 49 | 11 | 51 |
| September . | 5 | 44 | 4 | 23 |
| Total | 56 | 19 | 97 | 40 |

The distinguishing characteristic of the climate of this station is its comparative coolness during the hot months; and the temperature, low as it is, as indicated by the thermometer, is rendered still more agreeable to the feelings by a regular constant sea-breeze. But the mean temperature of the three months of March, April, and May, which in 1838 was only 79° 64′ was for the same period in 1839, 84° 38′.

The total number of deaths during the year has been in the Jail, ten; in the Detachment hospital, none. The former were as follows; Gunshot wounds, two; Scurvy, three; Remittent Fever, one; Diarrhœa, two; Anasarca, one; Cachexia, one; Total ten.

The total of admissions into the Jail hospital has been five hundred and fifty-three, the average numbers of each month, being forty-six, while the average number of prisoners has been 349.5, giving a proportion of thirteen per cent sick, and of deaths at the rate of 2.8 per cent on the whole number of prisoners in the Jail.

It should be borne in mind that there is a tendency on the part of the prisoners to seek admission into the hospital for trifling or for feigned ailments, in the hope of obtaining some indulgence in diet, or some relaxation of the prison discipline. This of course swells the apparent number of sick, as a short period of observation is sometimes necessary to detect the imposture. Trifling injuries, from the fetters also bring a great many to the hospital.

The average strength of the detachment of regular troops has been one hundred and sixty-nine; the proportion of sick among them nearly four per cent; no death.

Besides the regular troops, the sick of the Rutnagherry Rangers, and of the Civil establishment, and occasionally patients from the town and neighbourhood, are admitted into the Detachment, or as it is more properly called, the Civil and Military hospital. Forty-one cases of the Rangers have been admitted during the year; none has ended fatally.

At the beginning of April, the number of prisoners was suddenly increased by the capture of a gang of insurgents at Malwan, one hundred and four in number; of whom twenty-three were wounded — some of them very severely and affording an unusual opportunity for surgical practice. Three cases of compound fracture, in the immediate neighbourhood of large joints, called for speedy amputation, and in two, the operation was successfully performed, by the removal of an arm in each case. The third was a compound fracture of the femur, by a musket shot, just above the condyles. Every argument, and at various intervals, was employed to induce the subject of this injury to submit to amputation as his only chance for life, but he obstinately refused, and died, after some months, exhausted by hectic fever and profuse suppuration. The other fatal wound was a remarkable one, a man was shot in the back near the angle of the ribs, the ball taking an oblique direction towards the spine; it could not be extracted, and he died, reduced to a skeleton, after being three months in hospital. From the curvature of the spine which took place to a great extent

before death, it became evident that there was a loss of substance in the body of one or more of the vertebræ, and accordingly, on dissection, the ball was found to have passed through this part of the bony column, and was discovered lying behind the right kidney, much flattened and indented. The bodies of the two lower dorsal, and of the two upper lumbar vertebræ were almost entirely removed by the passage of the ball, and by subsequent caries and absorption. The escape of the aorta, and the spinal cord and its coverings in such an injury, was a singular feature of this case.

Among other serious wounds, was one of the throat, of great extent, between the os hyoides and the thyroid cartilage, which was inflicted by one of the gang, in an attempt to commit suicide with his own sword. Fifteen days having elapsed before the man was brought here, luxuriant granulations had sprung up, which, as the edges of the wound had not been kept in proper contact, made it a troublesome case to deal with. By the employment of two or three stitches, position, and bandaging, the man made a favourable but tedious recovery.

The same accession of numbers which gave me the above cases, led to results of much importance, for the desperate character of the Malwan prisoners obliged the officer in charge of the Jail, to enforce a very rigid system of confinement for the whole, of which the effects were eventually seen in that dreaded disease the scurvy. The principal sufferers were the new-comers as might be expected, for many causes co-operated to render them peculiarly obnoxious to the disease — close confinement, the sudden privation of the various stimulants to which most of them were accustomed, and the depressing passion, inseparable from the failure of their enterprise, and the dread of punishment, rendered it not at all surprising that scurvy should attack them. The first of these causes operated equally on all the previous inmates of the Jail, who in consequence of the arrival of the Malwan prisoners, were subjected to closer confinement than usual.

The following table exhibits the number of prisoners admitted with scurvy in each of the twelve months, with the total for the year. It should be stated that the gang from Malwan arrived in the beginning of April, and were nearly all removed under sentence of transportation early in October.

| January. | February. | March. | April. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | 2 | 2 | 0 | 1 | 2 | 40 | 13 | 2 | 0 | 1 |

Total number of cases admitted during the year — 69.

I will now proceed to notice the most prominent symptoms of the scurvy, as it has appeared here, and to describe the mode of treatment I have adopted.

The disease generally made its attack by a swollen and spongy state of the gums, which were more or less of a livid colour, and bled readily on being irritated; in many instances they extended in triangular processes between the teeth, or projected over them; the tongue sometimes, but not invariably, had an excoriated or fissured appearance near the tip; in seven cases, the mucous membrane of the cheek presented a similar appearance. The breath was generally fetid, and the face more or less puffed and swollen. The affection of the mouth was attended by various degrees of pain and swelling of the lower extremities, most frequently of the hams, in which hard tumors formed.

When the scorbutic diathesis was established, the mere pressure of the irons was apt to produce swelling and inflammation. In one or two cases, very acute pain was felt in the muscular parietes of the chest, unattended with swelling. Lind calls this "a dangerous symptom." It was observable that the greatest swelling was by no means attended with the greatest pain, the legs and ankles being often affected with an enlargement of a stony hardness, scarcely at all painful, and chiefly inconvenient by preventing the play of the muscles and action of the joints; whereas in a few cases the patients suffered most acutely from the slightest pressure on the lower extremities when scarcely at all swollen. In such, the parts had more of a shining appearance, and were much less rigid. The affection of the mouth usually appeared first, but sometimes the scorbutic swellings of the limbs preceded it. The constitutional disturbance was not very considerable in the generality of cases, but lassitude and depression of spirits in various degrees, accompanied the local symptoms, and the countenance exhibited a degree of dejection more or less marked.

In a paper * on this subject, which I had the honor of forwarding to

* Vide Appendix.

the Medical Board some months ago, I embodied all the statistical information, I could collect, regarding the disease as it has from time to time appeared in this jail, and it would therefore be superfluous in this place to repeat what I then stated, with respect to its causes and the mode of prevention which has been successfully adopted after a careful investigation of the subject.

I now therefore pass to the mode of treatment which I have employed with much success and which consists in the exhibition of tonics and cordials, including the bark in decoction and in powder, and particularly quinine, which I regard as a most valuable remedy in this disease. Vegetable acids, as limes and tamarinds, were very freely employed, in combination with "*goor*," or coarse sugar, in itself an excellent antiscorbutic. The local applications which were of most service, were washes and gargles of alum and decoction of bark, and the solution of chloride of lime, hot fomentations and friction (when the case admitted of it) with camphor liniment, or turpentine and oil, to the swellings on the limbs, and opiate plasters when the severe pain would admit of nothing else. With these measures, a more liberal diet than usual was allowed, and the general result was highly satisfactory.

Of the sixty-nine cases, three terminated fatally, two of them being old and debilitated subjects — the third was a robust man, who seemed improving, when he was suddenly attacked with extreme oppression at the chest, and died in a few hours in spite of every thing that could be done. Æther, camphor and opium, with a blister to the chest, gave temporary relief, but he died, after great suffering, with apparent symptoms of effusion on the chest. I was not allowed to examine the body, which I was anxious to do, to ascertain whether effusion had really taken place, as I believe scorbutic patients have been found to die in this manner, where no fluid has been found in the cavity of the thorax.

Before quitting this subject, I am desirous of retracting the favourable opinion I was induced to give last year, from a limited experience, regarding the employment of the nitrate of potash as a remedy in land scurvy. Trusting too much to the confident reports of the several zealous officers who had tried it at sea, I was led to give too much credit to its effect, in the only case in which I had an opportunity of employing it. From more extended trials during the past year, in which the dose of this substance was carried to ʒj, given six times daily, without any mitigation of the symptoms, I have no hesitation in saying that it is powerless as a remedy in the disease under consideration. Disappointed in my expectation of benefit from its use, I

changed the mode of treatment to that which I have already described, and had every reason to be satisfied with the result.

Two others of the deaths took place on the day the patients were admitted into the hospital — one of them, indeed, a very few minutes afterwards. In both, disease appeared to have been concealed or neglected — one of them was a cachectic subject; another had laboured under fever, and died from sudden and extreme congestion of the brain and its membranes. In the former case there was no opportunity for practice — in the latter, a large number of leeches and a cold lotion were applied to the shaved scalp, and a blister between the shoulders. Active purgatives and enemata were likewise employed, but the man became comatose, and died in the evening.

The two fatal cases of diarrhœa took place in old and worn out subjects who gradually sank under the disease. The remaining fatal case under the head of anasarca, was that of a man who had long laboured under extensive chronic disease of the chest and abdomen.

During the first three months of the year, eight or nine cases of cynanche parotidea occurred, which I notice rather for the singularity of the circumstance than for any importance attached to the disease, which readily yielded to mild remedies. I believe it to have been propagated by contagion, and no sympathetic affection of the testes was in any case observed.

*Dysenteric cases* were, as usual, numerous, but not generally severe, and none fatal. Moderate purging with ol: ricini, and the intermediate exhibition of ipecacuanha in free doses, combined with pilul: hydrargyri, or the hydrarg: *c.* creta, and opium, was found a successful practice in most cases. Occasionally a combination of calomel, opium and antimonial powder was useful, but not pushed to salivation. In the worst cases, great benefit was derived from the application of leeches circa anum, and the use of an injection of small bulk, containing forty or fifty minims of tinct: opii: and eight or ten grains of plumb: acetas. This never failed to relieve the straining and tenesmus.

*Cutaneous diseases* were more frequent than usual, notwithstanding care to prevent them by enforcing cleanliness. One inveterate case of vesicular itch, incurable by the ordinary means, yielded to a solution of the bi-chloride of mercury, in the proportion of ʒi. to a pint of water, without any unpleasant effects being occasioned by the remedy.

It only remains to notice the admissions under the head of fever, remittent and intermittent, but it is not my intention to repeat the

detail inserted in my last year's report of the mode of treatment adopted for each. Of intermittent fever 46 cases have been admitted, and I observe that 49 was the number in the preceding twelve months.

On the whole, taking into consideration the circumstances I have related, I think myself warranted in saying that the Jail has been tolerably healthy during the past year and the mortality inconsiderable. Very lately a material reduction has been made in the allowance of food to the prisoners, and a very strict privation of all luxuries has been ordered by the Judges of the Sudr. Adawlut. But the present allowance is still considered sufficient, with the advantages of clubbing their rations; and a discretionary power, under strict limitations, is granted to the Civil Surgeon to direct any such increase or addition to the diet of a prisoner, as his state of health may render necessary. The following is the quantity of food allowed to each prisoner, under the late regulations.

"Scale of diet for every full-grown person daily

| | Avoirdupois. lb. | oz. |
|---|---|---|
| Of beaten rice (coarse) or of bajree, jowaree or wheat flour. . . . . | 1 | 2 |
| Of dhall of any kind . . . . . | 0 | 6 |

Stimulating condiments to the value of one pie per man.

Increased allowance in cases where it may be necessary.

| | Avoirdupois. lb. | oz. |
|---|---|---|
| Of grain, as above. . . . . | 1 | 8 |
| Dhall . . . . . | 0 | 8 |

And condiments to the value of three pies."

Medical aid has been afforded during the year to numerous applicants from the town and neighbourhood.

In the Detachment Hospital not much of interest has occurred, with the exception of the following case.

*Pleuritis in which the operation of paracentesis thoracis was performed.*

Juggun Naikloo, aged about twenty-five, of a spare habit and sickly constitution, Private, 18th Regt. M. N. I. came to Hospital on the 22d July, 1839, complaining of inability to do his duty, and of a pain in the left shoulder, with hurried and difficult respiration, much aggravated by exertion. These complaints had existed ten days before he presented himself, and his account of his previous symptoms is embarrassed and obscure. He says he has had no pain of the chest or side, no fever; and only very slight cough,

while in the lines. On examing the thorax, the natural resonance is found to be entirely lost over the whole of the left side, and a still more remarkable phenomenon presents itself in the displacement of the heart, which is felt and seen strongly pulsating on the right side of the chest. The spot in which the impulse is most forcible and distinct, both to the touch, and to the eye, is immediately below the cartilage of the second rib on the right side, in which situation it is as great as that afforded by the apex of the organ in its natural position. The pulsation is moreover generally felt over the whole of the right side of the chest, and completely wanting on the left, which is visibly enlarged in the situation of the intercostal spaces, and affords on percussion an obscure sense of fluctuation. The natural hollow below the clavicle on that side is entirely lost, and compared with the opposite one, there is a general fulness in the part. The epigastric region is tense and swollen from pressure on the diaphragm, and the liver is forced low into the right iliac region. The pain in the shoulder attracts more of the patient's attention than any thing else, and he is urgent to have it relieved. The pulse is one hundred and twenty and feeble; skin cool; tongue white. He has slight tickling cough, but breathes with tolerable ease when in a state of repose, and it is particularly observable that he can lie with equal ease on either side.

A brisk purgative was ordered and two blisters applied in succession over the affected side of the thorax, the latter of which was kept open for some days with relief to the cough, which was entirely removed. Calomel and tartarized antimony were employed in repeated doses, till the gums became tender, when it was omitted. A diuretic and tonic mixture with infus: calumbœ and spir: æther: nitric: was then prescribed and the purgative repeated at the interval of a few days.

The fulness of the epigastrium remained undiminished, the tongue became clean, the appetite was tolerably good, and what is rather remarkable, he slept well. He still complained chiefly of the pain in his shoulder, and considered it his principal ailment. The following was then ordered.

℞. Tinct: Digitalis ℥i. Spir: æther Nitric ℥ii. Liq Ammon. Acetat: ℥ii. mistur. Camphor ℥iv. in a fourth part three times a day.

*2d August.* The pulse is now reduced to 96, soft and regular, but the pain in the shoulder much harasses the patient, and prevents his sleeping; the belly is soft and less tumid, bowels open; tongue clean. To satisfy him, an anodyne liniment was ordered for the shoulder, and the diuretic mixture continued. A seton to be put in the left side of the chest.

*3d.* Not so well this morning, pulse 96 and very feeble, and the skin rather below the natural standard of heat; the belly is very tense, and the left side of the chest presents an increased appearance of fulness in every part.

℞. Acet. scill. ℥i. tinct. digitalis m. xx. Spir. æther. nitric. ℥ss. infus. calumbœ ℥iss. M. ft. haust To be given three times a day.

Extract. Hyoscyam. grs. viii. Pulv. Antim. comp. grs. iv. ft. pil. ii. To be taken at bed time.

*4th August.* Got some refreshing sleep and feels rather better; no further change in the symptoms.

Continue the treatment.

*Vespere.* The dyspnœa has become extremely urgent; the greatest distress is occasioned by the pressure on the abdominal viscera, and the tension and swelling of the belly are increased: the feet and the integuments of the left side of the thorax are œdematous, pitting deeply on pressure.

Repeat the pills at bed time.

*August* 5th. I found the patient much worse this morning; the œdema increased; the dyspnœa so great as to threaten suffocation; the pulse small and frequent; the surface colder than natural. Under these circumstances, and being well assured from the symptoms of the existence of an extensive effusion on the left side of the chest, I proceeded to perform the operation of paracentesis of the thorax. An incision was made between the 6th and 7th ribs, and close to the upper margin of the latter at a point somewhat anterior to the digitation of the serratus magnus muscle; this gave outlet to upwards of eight pounds of a straw-coloured fluid, which on cooling, formed a buff-coloured coagulum of extreme toughness and density, from which scarcely any serum separated. After the operation, which was followed by immediate relief, the pulse fell to ninety-two. A saline effervescing draught was then given, with Tinct: Hyoscyam: ʒi. and liquor ammon: acetat: ʒss.—

Two P. M. Pulse was one hundred and eight, weak and small—there is tendency to cough on speaking, but no fever; bowels open scantily.

*Vespere.* He is sitting up, and says he is better, tongue clean and moist, but there is morbid heat and dryness of the surface with a sense of chilliness. Pulse upwards of one hundred; bowels not again moved. I found he has imprudently eaten meat to-day.

R. Soda Tart. ʒi. Vin. Ant. Tart. ʒi, Liq. Ammon. Acetat ʒiss. Tinct. Digitalis ʒi. Mist. Salinæ ʒiv. m. a fourth part every four hours.

*August* 6th. Pulse and skin as at last report; he slept but little from pain in the wound; he has no cough; the bowels were thrice moved during the night; tongue moist and yellowish in the centre. The œdema of the feet has nearly disappeared, that of the chest entirely so. The swelling and tension of the epigastrium and right side no longer exist—the abdomen is soft and elastic. The heart is still felt and seen strongly beating between the cartilages of the second and third ribs on the right side; the resonance of the left side of the chest is completely restored and it is now more resonant than the other.

R. Hydrarg. Chlorid. grs. ix. Antim. Pot. Tart. grs. iii. divide in three powders. One to be given three times a day.

*August* 7th. Was purged five times yesterday, and as often last night—the stools being amazingly copious, fluid, with a small admixture of frothy feculence, which floats above the serous discharge: the swelling of the feet is quite gone. The medicine occasioned no nausea, and he does not appear exhausted by the the profuse discharge from the bowels: pulse ninety-six, small and soft, no cough nor heat of skin.

Continue the powder.

*Vespere.* Only one stool since morning, more feculent. Slight heat of skin at present, pulse 120, tongue moist. Complains of a good deal of pain in the wound, from which there is as light oozing tinged with blood.

Apply a poultice over the wound.

*August* 8th. Three stools last night, yellow and feculent. He slept tolerably, and feels better this morning; skin of natural warmth and moist, which it has not hitherto been; pulse one hundred and four. The wound is suppurating gums slightly tender.

Omit the powders.

*Vespere.* Some heat and dryness of skin.

℞. Magnes. Sulph. ʒiss. Vin. Ant. Potassio. Tart. m. xx. Mist. Salinæ ℥iss. m. ft. haust. To be taken every four hours.

*August* 9th. Passed an uneasy night, with pain in the left side of the chest and shoulders, was chilly and restless, and has now febrile heat of skin, with a pulse at 120, and very feeble; thirst, urine high-coloured, bowels twice moved; the respiration is frequent, incomplete and abdominal, the respiratory murmur cannot be heard on the left side and is indistinct on the other.

Ten leeches to the left side of the chest. Continue the draught.

2. P. M. Feels relieved by the leeches, and has been dozing, the skin is cooler and moister; respiration twenty-six in a minute, one stool since morning, pultaceous, copious, and of a green colour.

℞. Potass. Nitrat. grs. x. Tinct. Digitalis: Sp. Æther. nitric. aa. m. xx. Aq. Fontan. ℥iss m. ft. haust. To be taken every four or five hours.

*Vespere.* Has had slight hæmoptysis; in other respects as before.

Continue.

10th. Did not sleep well last night; but is much less feverish this morning; the skin being of natural temperature, pulse still one hundred and twenty, soft and small; bowels moved three times during the night, tongue moist and yellow in the centre, thirst, no cough.

℞. Potass. Nitrat. ʒi. Spir. Æther nitric ʒii. Mellis ʒiss. Aquæ oiss. m. ft. Let him take this occasionally as common drink.

Continue the medicine.

*Vespere.* Skin now warm and dry, he complains of a good deal of pain in the situation of the wound.

With the draught at bed-time, let him have Tinct Hyoscyami ʒi.

*August* 11th. Passed a restless night, was four times purged and says he felt very hot; the skin is now perfectly cool; pulse ninety six feeble; respiration hurried and incomplete; inability to dilate the chest.

Let the chest be vesicated on the left side, with the liquor lyttæ.

Continue the medicine.

*Vespere.* The blister rose well and is discharging, no heat of skin all day, and not much thirst, bowels open.

Extract. Hyoscyam. grs. viii. Pulv. Antim. comp. grs. iii. in two pills at bed time.

*August* 12th. Got some hours of refreshing sleep and feels better, perspired moderately; the bowels were open three times during the night; pulse one hundred and eight; breathing easier; the gums are still rather tender.

A saline effervescing draught to be given every five hours, with Tinct. Digitalis and Vin. Ipecacuan. aa. m. xx.

Repeat the pills at bed time.

*August* 13th. Got some comfortable sleep, and feels better this morning; respiration more tranquil; pulse one hundred and twelve.

Continue all the medicines as yesterday.

*Vespere.* Skin of natural warmth, pulse one hundred and eight, tongue clean and moist; the countenance has much less expression of suffering and anxiety than hitherto.

*August* 14th. Slept well; no fever; pulse one hundred.

Continue.

*August* 15th. Going on favorably; pulse ninety-six and firmer; bowels open; the pulsation of the heart is observable in the same situation as before, — there is a degree of bulging of the ribs at the lower part of the thorax on the affected side.

Continue.

*August* 18th. No material change in the symptoms since last report. Some air is now said to have passed by the wound, which has appeared closed, on coughing last night; the granulations are small indolent and higher than the surrounding skin.

*Vespere.* About a pint of turbid serum has trickled from a minute orifice in the centre of the wound, during the day; coughing promoted the flow, and there is now a tendency to tickling cough on speaking, no pain or fever, pulse eighty-eight.

Tinct. Muriat. Morph. Vini. Antim. Potass. Tartrat aa m. xxv. Mistur. Camphor. 3x. at bed time.

*August* 19th. Slept well, and makes no complaint this morning: a probe easily passes into the interior of the chest; no further evacuation of fluid has taken place during the night, he has occasional dry cough.

℞. Pulv. Ipecauan.; Pulv. Digitalis aa grs. vi. Extr. Hyoscyam. ℈ss. m. Divide into four pills. One to be taken every four hours.

*Vespere.* About three or four more ounces of yellow and rather opaque serum have been discharged to-day from the chest, and it now trickles away on

coughing. Skin quite cool; pulse eighty-four soft and weak; appetite good; he is becoming emaciated.

*August* 20th. Slight oozing from the wound during the night, bowels thrice moved, but he slept tolerably; pulse eighty-four; no heat of skin.

Continue the pills.

*Vespere.* Three or four ounces of a dirty-yellow fluid have exuded within the last hour, the pulsation of the heart continues in the same situation as before, but is much less forcible.

Blister to be repeated to the left side of the chest.

*August* 21st. Discharge from the chest continues; pulse eighty-eight.

℞. Hydrarg. Chlorid. gr. i. Pulv. Scillæ grs. iii. Pulv. Digitalis gr. iss. Cons. q. s. ft. pil. To be given three times a day.

*August* 22nd. Increased flow of urine since yesterday, no further discharge from the chest, he slept well.

Continue the pills.

*August* 26th. No further dischage from the wound occurred till this date, when about three ounces of a sero-purulent fluid slowly trickled from it, by a very minute fistulous orifice. Being collected and allowed to stand, it let fall a quantity of flaky lymph. The gums being slightly tender on the 24th the pills were then omitted, the blister is healed.

Repeat the blister.

Let him take at bed-time Extract Opii. gr. i. Pulv. Antim. compos. grs. iv. m.

*August* 27th. The blistered surface discharging fully, pulse eighty-four; skin cool and moist; little or no cough.

℞. Infus Cinchonæ ℥iss. Acid Sulph. Aromat. m. xx. three times a day.

It would be tedious to follow up minutely the daily details of the case which necessarily involve much repetition. Its further progress shall therefore be given in the narrative form.

As long as the blister remained open, the discharge was much diminished, but returned in greater quantity on its healing; it was of a dirty greenish-yellow colour, and deposited pus on standing. On the 2nd September a seton was introduced in the affected side of the chest. On the 3rd (probably from some exposure or imprudence) he was attacked with a severe dysenteric complaint, which much reduced him in flesh and strength, and brought him into considerable danger. By the 12th, however, he was much recovered. I omit the details of the treatment as occupying too much space, and not being essential to the main history. It was now observed that the flow from the chest, which was completely established, only took place when the patient was in a sitting or erect posture, always ceasing when he was recumbent. Each expiration occasioned a slight gush from the part, and the discharge gradually became more

purulent; the daily quantity being about two ounces. Various light tonics with a mineral acid, were exhibited, after the cessation of the bowel complaint; and matters remained in this state till the 1st October, about which time, there was some tendency to hectic exacerbation in the evening. The tonic medicines were omitted, and a mixture substituted, with digitalis and hydrocyanic acid, from which he derived benefit. The discharge was now entirely purulent.

When he had been three months in Hospital, he had regained some degree of strength, but was occasionally affected with a sense of chilliness in the evening, with hectic frequency of pulse, which was 100 in the morning, and 120 at the evening visits, attended with heat and dryness of skin. He generally slept well and made but little complaint, but had occasional dry cough; the tongue was always clean and moist.

By the 1st December, upwards of four months from the date of admission, the pulsations of the heart had become much less forcible on the right side of the chest, and were discernible beneath the sternum, but this organ, never entirely, resumed its normal position. It appears probable, that adhesions had formed at an early period of the disease, which prevented its doing so, and that these had gradually become elongated, after the evacuation of the fluid. On the 4th December, the detachment to which the patient belonged, was relieved, and he left the Hospital to rejoin his regiment at Belgaum.

The success of the operation in the above case, can only be said to have been partial, as it is to be feared, the patient may be left with the inconvenience of a permanent fistulous orifice in the parietes of the chest, and a chronic purulent discharge from the cavity of the pleura. Should this be the case, it must be attributed to the lung having been so far condensed by excessive pressure, as to prevent its again expanding, sufficiently, to occupy the space left by the removal of the fluid. Various such instances are on record, of which, I believe, one of the most remarkable occurred in the person of a foreign physician, now living, who underwent the operation for empyema; and who, thirteen years afterwards, published his own case; at which time, pus continued to be daily evacuated from a fistulous orifice in the walls of the chest. This circumstance did not prevent him, from following his profession, and otherwise actively exerting himself. It remains, for time to show, whether the subject of the present case, will eventually escape this inconvenience, by the gradual cessation of the discharge, which is at least very possible.

In the foregoing example, the displacement of the heart was the least equivocal of the diagnostic symptoms, and the French writers have noticed several similar cases, in which, it was equally remarkable. In one, recorded by Pelletan, the pulsations were observed in nearly the same situation, as in this instance. A very interesting case, in which he was himself the operator, is related at considerable length, by Baron Larrey in his Memoires de Chirurgie Militaire;

Tom. 3. In this example, the return of the pulsation of the heart to its natural situation, was also, extremely slow and gradual. Fifteen days after the operation, no appreciable change in this respect had taken place; but after a period which is not specified, we are informed that "le cœur revenait graduellement vers son domicile ordinaire, en sorte que ses pulsations se faisaient journellement sentis plus pres du sternum."

## Article X.

### *Medical History of H. M. 2d or Queen's Royal Regiment, from the 1st of April 1838, to the 31st of March 1839.** By R. H. Hunter, Esq.

Presented October, 1839.

Station.— During the first six months, Belgaum. Average strength of the regiment, during that period, 692.—Average age, about 32.—Average number of years in India, about 13. Total Admissions during the six months, 485. — Deaths, 7. — Invalids, 23.

Weather. — There was a smart shower at Belgaum on the 1st of April, and again, in the vicinity, on the 4th. From that to the 20th, the weather was dry and warm; then, frequent thunder storms towards evening, with heavy showers, particularly in the night, to the 27th; then, dry and close. Thermometer's highest diurnal range, 85° to 94°. Lowest at 7 A. M., 70° to 76°.

*May.* Again, thunder storms on the 1st and 2d of May. From that to the 20th, dry and hot during the day, but, mornings and evenings cool. After the 20th, frequent thunder storms, with heavy rains particularly in the night. In the intervals, sultry. Thermometer's highest diurnal range, 80° to 94°. Lowest at 5 A. M. 72° to 76°.

*June.* The first few days of June, were warm and cloudy. Thermometer's maximum, 89°. On the 5th, thunder, lightning and heavy rains. From that to the 10th, showery. The rains then set in, and the thermometer fell to maximum, 76°, about which, as the average, it continued the rest of the month. From the 10th to the 23d, the last about new moon, was very wet; then, light showers and cloudy, but no day without rain. Thermometer's highest diurnal range, 73° to 89°. Lowest at 7 A. M, 71° to 76°.

* Continued from Vol. ii.

*July.* Was generally cloudy, occasionally with light, sometimes with heavy showers; but only twice did more than thirty cents fall in the twenty-four hours. Indeed, this month was particularly fine and pleasant; in all, under 3½ inches of rain. Thermometer's highest diurnal range, 72° to 78°. Lowest at 7 A. M., 70° to 72°.

*August.* Was alternately cold, wet and boisterous; and milder, with light showers, but generally raw and chilly. In all 3½ inches of rain fell. Thermometer's highest diurnal range, 72° to 77°. Lowest at 7 A. M. 69° to 71°.

*September.* Up to the 14th was cloudy; occasionally; with light showers; then, thunder storms daily, with heavy rains towards evening, till the 27th, when the weather cleared up. Wind during the last few days of this month, generally, from the N. E. in the morning; but, close, hot and sultry in the afternoon. Total rain in September, about 5 inches. Thermometer's highest diurnal range, 74° to 78°, except the last two days, 81° and 82°. Lowest at 7 A. M. 69° to 72°, except the last 5 days, 73° to 74°.*

DISEASES. Our remarks on the diseases at Belgaum, during the above six months, need only be very brief, as they have not materially differed from those of the same period of last year. Of the principal classes, however, we may say, these took the lead.

In April, mild fevers of the remitting and intermitting types; rheumatism, and dry catarrhal or asthmatic complaints; the two former particularly after the rains. We had also a few cases of Diarrhœa, Colic, Dyspepsia, and two of simple Jaundice.

In May, Colics (chiefly purgings and vomitings); acute Rheumatism; mild Remitting and Intermitting fevers, and Catarrh. On the 30th, one well marked case of Dysentery, the first of the year. In all, strictly, that is, well marked; Colics, twelve; Rheumatism, nine; Remitting fever, eight; Intermitting, one.

In June, again, Fever, Rheumatism, and Catarrh; and in the end of the month, Dysentery. In all, well marked, Remitting fever, ten; Intermitting, one; Rheumatism, nine; Catarrh, six; Dysentery, (Colitis), three.

In July, Catarrh and Bronchitis, Fever, Dysentery and Rheumatism. In all, well marked; Catarrh and Bronchitis, ten; Remitting fever, seven; Dysentery, six; Rheumatism, five.

* Our notes of the weather &c, in the beginning of October, have been lost.

In August, Bronchitis, Rheumatism and Fever, particularly the former about the middle of the month. Also a few cases of Catarrhal Ophthalmia, Cynanche Tonsillaris &c. One fatal case of Hepatic abscess, and one of Colitis. In all, strictly; Bronchitis, twelve; Rheumatism, twelve; Fever, nine.

In September, Catarrh, Rheumatism, Fever and liver complaints; and at the close of the rains, one case of Cholera, together with a few of Colic nearly approaching to it.

*Fatal Cases.* The most fatal diseases have again been, those of the Heart and Aorta; Dysentery and Hepatic abscess. The first on admission, was marked Carditis, but upon what grounds, does not satisfactorily appear. The subject of it,

Private Michael McGinn was admitted, it seems, on the 24th of May, complaining of pain on pressure under the border of the left false ribs, without cough or other pectoral symptom; with the exception of a somewhat more energetic impulse of the heart than natural, raising the chest a little; pulse rather small. Was cupped to ℥viii. over the seat of pain, and had a purgative. He died suddenly on the morning of the 27th.

*Autopsical report* by Dr. Hibbert; Heart very slightly exceeding the natural size, and the difference consisting in a thickening of the left ventricle only.

Abdominal cavity, on being laid open, exhibited an immense quantity of coagulated and dark blood, filling up the interstices throughout, and occupying particularly the cavity of the pelvis, within the mesenteric folds.

No cause can be adduced, but a general effusion from the mouths of the vessels, since, from injections thrown into the Aorta and Vena Cava, no effusion within the cavity resulted. No other abnormal appearance.

The only remark we need make, is, if the disease, as is supposed, belonged to the Hæmorrhagica, the increased energy of the heart may be accounted for, without supposing hypertrophy of the left ventricle, which, indeed, the weak pulse would seem to contradict.

The second and fourth were cases of Aneurism; the one of the thoracic, and the other of the abdominal Aorta. These, "Murray" and "Whyms," are already before the Society.

The third and fifth; the one on admission marked "Diarrhœa," and the other, "Febris Remittens," were cases of, or at least terminated in, hepatic abscess: they require no comment. The sixth, acute Dysentery, terminating in ulceration of the colon, and in no particular, differing from the ordinary dysentery of the rainy season.

The seventh was a very obscure case, and led to much false conjecture. At one time, it was supposed to have been hepatitis running to abscess; at another, hepatic abscess conjoined with dy-

sentery; a very common occurrence, at that season; at another, tumor over the aorta, from the strong impulse, and at one time, even aneurism. The subject of it,

Private Matthew Sellard was first admitted on the 11th of June with diarrhœa, accompanied with pain on pressure in the hypogastric region, for which he was leeched, and took medicines, chiefly absorbents and opiates, with occasional laxatives; and so far recovered, as to be able to return to his duty on the 14th of the following month. On the 19th, was again admitted with similar complaints. The pain on pressure was now in the epigastric region, where a firm circumscribed tumor was very perceptible, yielding a sharp heaving impulse. Soon after, he became subject to occasional vomiting, and at last, his symptoms assumed a decided hepatic and dysenteric character: under which he rapidly sunk. Died on the 21st of September at 3 A. M. *Autopsy;* 11 A. M. Liver enlarged and of a very pale yellow colour, very soft and lacerable, having from its free edge hanging, and firmly attached to the transverse colon, an encysted tumor the size of a large egg, filled with soft brain like matter, and its cyst lined with gritty and osseous plates and spikes. The colon, particularly, in its transverse arch, was extensively thickened and ulcerated.

Besides these, there was a fatal case of colitis in October, not included in the seven.

On the 21st of October, the 2nd or Queen's Royal Regiment left Belgaum; embarked at Vingorla, on the 30th, in the Semiramis Steamer, and Taptee Brig; and reached Bombay on the 2nd of November; where, they immediately disembarked, and went into Fort George barracks. On the 17th, about 580 of all ranks, picked out, were embarked in the Danish ship Syden and Euphrates H. C. Brig, for Field Service in Scinde; about 490 in the former, a vessel of 750 tons. This, the Head Quarter Ship, was extremely crowded, in consequence of the number of Camp followers; provisions and stores were also put on board; in all, we reckoned 720 souls. A great number of the officers and men, of course, slept on deck, and the rest were so closely packed, that it was almost impossible to find a way, through, amongst them. The ship, however, had an excellent gun-deck, and a degree of ventilation was kept up by means of the gun-ports, during the short period we were on board.

At first, the weather was very favourable, fresh breezes and rather cold in the morning, but latterly the winds were light, often tending to calm; till off the Indus, on the morning of the 27th, when we had a strong cold northerly wind, which carried us within a few miles of the anchorage, off the Hujamree mouth. Here, it fell calm about 1 P. M. and the current running strongly out, we dropt anchor; but in the evening, got up to the other ships, two miles or so from the bar.

Next morning, at the recommendation of a Medical Committee, of which, the Superintending Surgeon was President, the native followers were immediately put into other vessels, and one Private with Hepatitis, ordered on board the Steamer. At 2 P. M. the disembarkation of the troops commenced into native boats, to go 18 or 20 miles up the river; but, chiefly from the scarcity of these, all did not get on shore, till the morning of the 1st December. A great majority got up in one tide, in from four to five hours; but, I believe, all had at least one night in the boats. The detachment from the Euphrates Brig, rejoined on the morning of the 2nd.

Two miles from Vikkur, on the opposite, the right bank of the Hujamree, the regiment pitched on dried mud and stubble; where, they were gradually joined by the rest of the Bombay Division of the army of the Indus, about 5, or 6000 of all arms. * The en-

* *Extract from the Author's Annual Statistical Report of Lower Scinde, Cutch Gundava, Sewestan, Afghanistan, and Beloochistan, from 1st December 1839 to 31st. March 1840.*

LOWER SCINDE, or that portion traversed by the "Corps d'armee," may be described, to be a low flat alluvial stripe or belt, running nearly North and South from the Hujamree mouth of the Indus, in latitude 24° to Larkhanu or Shikarpoor in 28° North, and extending from 67° 40′ to 69° 20′ East longitude.

It is bounded on the West by a dry, barren, stony and rocky soil, which gradually rises to, and terminates in, the Hala and Lukkee ranges of mountains, at the distance of from ten to forty or fifty miles; and on the East, by extensive sandy deserts. Rain is I believe, extremely unfrequent, and the land solely dependant upon the river for artificial irrigation.

The soil, a light clean, dusty mud, is extremely fertile, and the whole country, with capital, under a paternal Government, might be rendered a perfect garden. Wheat, sugar cane, and cotton, seem at present to be its chief productions; the two former grow very luxuriantly, but the latter was not in season. Scinde is subject to high winds with driving dust, which renders every thing extremely uncomfortable; but the climate appears to be very healthy, and ophthalmia, by no means frequent.

Our further remarks must necessarily be confined to the line of march, from the Hujamree mouth, along the right bank of the river to Larkhanu, or rather, to the desert, which stretching across from the Hala mountains to the vicinity of Shikarpoor, separates Scinde from Cutch Gundava, and, this we shall divide into three portions.

1st, The Delta, through which, the river, at that time chiefly by the Hujamree, empties itself into the Sea.

2nd, The right bank of the Indus, from where, the right branch is given off, twelve miles below Tatta, to where, the Lukkee mountains touch the river. And 3d, from the Lukkee range to the desert, twenty miles, or so, beyond Larkhanu. The first is altogether a dry, dusty, alluvial plain, in tolerable cultivation; near the different branches of the river, but, towards the central parts, rather

campment was about 300 yards from the river; the banks of which, at that part, are abrupt and clean, and ten feet perhaps above the level of the tide.

Here, our Brigade, the first of Infantry, composed of the 2nd or Queen's, the 1st or Grenadier, and 5th, Regiments of N. I. remained till the 26th of the same month, when it commenced its march upon Tatta, through dusty alluvial plains, partially covered with low shrubs and jungles, interspersed with dry stubble fields, eight miles. Crossed a small branch by a pontoon bridge, and pitched, a

high, desert and nearly destitute of water. The principal town is Vikkur, about twenty miles up the Hujamree; it is a tolerably sized village, situated immediately on the left bank, in a low flat, but comparatively well cultivated country. It is the chief port (or was at that time) of the Indus, and the resort of a great many small craft, both river and sea going. The bar at the entrance of the Hujamree, is a great drawback; in 1838—39, it had six to ten fathoms at high water, with a heavy surf upon it. No vessel can enter from May to the middle of October; that is, during the South West monsoon, and rise of the river (This Season 1839—40, the Hujamree is not the chief outlet, nor is it navigable into the main stream).

The streets of Vikkur are very narrow, and the houses or rather huts, low flat roofed, and built of wicker work daubed with mud. Its population I dont know, or its manufactures, with the exception of earthen ware, chiefly hand mills for grinding corn; their being no stones in this part of the country. The banks of the river in the neighbourhood of Vikkur, and indeed, every where along the Indus, present a new formed, or clean, broken, dried, muddy surface. No where, do we see vegetation in a decaying state.

The second, or that portion extending from where, the right branch of the Indus is given off, to where, the Lukkee range touches the river, consists of the alluvial deposit, and is of various breadth, generally, from one to three miles, jutting in, sometimes, a considerable depth up the valleys. From the elevation of this bank, it is not so easily watered, and is, in consequence, in a very indifferent state of cultivation, with the exception of the vicinity of Tatta and Jerruk. Besides, a great part of it, particularly, from about thirty miles south, to as far north, of Hydrabad, is converted into Shikargahs, or thickets for the preservation of game.

There are some fine lakes a mile west of Tatta, and again, ten miles north of it; and one very extensive in the neighbourhood of Lukkee, a village near the extremity of that range of mountains. In all, the water is excellent, with the exception perhaps of the last, which from its vicinity to some hot sulphureous and cold, saline springs in the mountains, a couple of miles or so from the lake, is, liable to be more or less impregnated with these. The chief sources of all these lakes, is, no doubt, the river, and the water is preferable from its comparative clearness. The Indus water is always very muddy.

Of this portion, Tatta is the principal town; it is situated upon a dry elevated piece of ground, about half way between Vikkur and Hydrabad; both, however, on the opposite or left bank, and from the heights to the southward, presents rather a grand appearance, which gradually vanishes on a closer ap-

mile on the opposite side, in dry stubble. On the 27th, marched over extensive, level plains, pretty clear and open, and afterwards waste, dusty flats, scattered over with low shrubs and stunted jungles, ten miles. Pitched again in dry stubble; clean water scarce, and brought from some distance. 29th. Crossed the desert, seventeen miles, over dusty wastes, partially covered with stunted shrubs and bushes, with here, and there, patches and belts of high trees and jungles; from the 10th to the 15th mile, before opening upon Gholum Shah, rather dense.

proach. The elevated site gives the houses a lofty appearance; and the smooth, light colored mud of which they are built, that, of polished stone. Tatta is surrounded by a broad plain of the alluvial formation, scattered over with corn fields, high trees and tamarisk jungles. The river, I believe, formerly ran to the west of the town, but now, it is three or four miles to the east of it. The soil is here damp underneath, and a salty crust is in many parts visible on the surface; during the rise of the river, a great part of it, is, I understand, inundated. We have already noticed the hot sulphureous, and cold saline springs in the neighbourhood of Lukkee. The temperature of the former, we found to be from 103° to 105°, but the latter, we had no means of analysing: every thing not absolutely wanted for daily use, having been sent up the river in boats, from the scarcity of land carriage.

We now come to the third portion, or that, which extends from the Lukkee range to the neighbourhood of Larkhanu. By far, the greater part of this, is an alluvial island, bounded on the east by the Indus, on the north-west by the "Nara," a branch of the Indus given off near Larkhanu, and on the south-west by the "Aral," a continuation of the same stream, which rejoins the Indus at Sehwan. This island is well watered, and, particularly so, its southern extremity, from an extensive lake which runs eight or ten miles inland. The island is in general more fertile and populous, than any other part of Scinde, which we passed over. The last days march, only, we found waste and jungly, that is, across from the Indus to the Nara. Of this portion the principal towns are Sehwan and Larkhanu; one near each extremity, but, neither of them, on the island. Sehwan is a small port on the right bank of the "Aral," close to its junction with the Indus. Larkhanu is eight miles or so inland, north of the Nara, and ten or twelve west of the Indus. This last seems to be rather a populous place, with a good deal of cultivation about it, and along the banks of a canal, which runs from the Indus to ten or twelve miles west of the town. This canal was dry, when we were there in March and December, but, water was plenty even for irrigation, raised from wells in its bed, by the common wheel. From the immediate vicinity of this canal, however, north to the desert, the country is very waste, and nearly destitute of water; and in consequence, the Bombay portion of the Force, now, about three thousand, had to cross in three divisions. Of the population or manufactures of either of these last two portions of lower Scinde, I have no knowledge, never having been in any of the towns or villages, farther, than marching through them with the Regiment.

Left Ghollum Shah, some miles, to the right, and crossed the right branch of the Indus, rather more than knee deep, and pitched on the opposite bank, dusty sand: did not get in till 3 P. M. The troops latterly suffered much on this march, from driving dust, and thirst, but, the latter only for a mile or two, the supply sent half way not having been exhausted in their canteens, till about that period. Halted the 29th, and on the 30th, crossed the heights to Tatta, twelve miles; the first part, dusty and jungly; afterwards, stony with thick prickly bushes. Passed over the eastern extremity of an old fort, down into the former bed of the Indus, flat and dusty, but partially cultivated, and more or less covered with Tamarisk and belts of high trees, the latter, particularly, as we approached the city. Pitched to the west of Tatta, at the foot of what appeared to be a low ridge of hills, covered with tombs; the former bank of the river. Good clear water in lakes, at the foot of these; the river is three or four miles distant.

To avoid repetition, we may here say, the line of march from the right branch of the Indus to Sehwan, at the termination of the Lukkee range of mountains, lay, partly over the original formation, a perfectly barren, stony and rocky desert; and, partly over the alluvial deposited from time to time by the river, a rich dusty mud, partially cultivated, where water for irrigation is easily obtained; the crops consisting chiefly of wheat and sugar cane, every where rich and luxuriant. The rest, waste, partially covered with low shrubs, tamarisk and babul, with, here and there, extensive tracts turned into thickets for the preservation of game.

Remained at Tatta till the morning of the 23rd, when the whole Force moved upon Jerruck, thirty miles. Reached that, on the 25th and pitched, all, except the 1st Infantry Brigade, on the rocky terraces to the left and front of that village. The 1st Brigade, in advance on the alluvial plain below. River here embanked about 500 yards to our right.

On the 3rd of February, marched upon Kotree, opposite to Hydrabad, where, we pitched the following day twenty-three miles; again, upon the alluvial bank. Commenced our march upon Sehwan on the 10th; reached the village of Lukkee on the 16th, seventy-five miles, and pitched round on the alluvial, dry, dusty mud; one and a half miles from the hills. In these mountains, directly in from the village, were discovered cold saline and hot sulphureous springs; the temperature of the latter, from 103° to 105°. On the 23rd, crossed the low point, where, that range touches the river, to Sehwan; twelve miles, and again, pitched upon the alluvial.

From Sehwan to the Aral river, near Larkhanu, the soil is altogether a rich dry mud, tolerably well cultivated, and the villages comparatively numerous and populous. During the first ten miles it resembles a rich park, and is plentifully supplied with water, from the rivers and a large winding lake. The last seventeen miles, only, that is, across from the Indus to the Aral, is waste and jungly. Left Sehwan on the 25th; crossed the Nara river by a pontoon bridge, and reached Aral, near Larkhanu, on the 2nd of March; eighty-five miles. The Infantry crossed, the same night, by moon light; and on the following day, the men and baggage in boats. And on the 4th, moved on to Larkhanu, nine miles, where they were followed by the Artillery and Cavalry, a few days after: soil still alluvial. Water and supplies at Larkhanu, abundant.

Here, three regiments of Native Infantry, and a proportion of Artillery, were detached to Bukkur and Sukkur, near Shikarpoor; and the sick and weakly men of the other corps, picked out (forty-seven from the Queens), to be sent to the Depot, about to be formed in that neighbourhood.

Left Larkhanu, on the 11th, in three Divisions, Her Majesty's 2nd and 17th, leading; and on the 23rd, reached † Kotra (four villages),

† *Extract from the Author's Annual Statistical Report.*

Cutch Gundava, situated between Scinde on the south, Beloochistan on the west, and Sewestan on the north, and comprehended in from 27° 30′, to 29° north latitude, and 67° 30′ to 69° 30′, East longitude; may be described to be a triangular alluvial plain, or delta, having its base resting upon a dry, flat, alluvial desert, from twenty-five to forty miles in breadth, which stretches across about N. E. by E. from the Hala mountains to a little north of Shikarpoor; and its apex terminating near Dadur, at the entrance of the Bolan pass. Its height above the level of the sea, I do not know, but, it cannot be much more, than that of Scinde, of which, indeed, it might be called a continuation. It is bounded, on the north, and west, by high barren mountains, which rise abruptly from the plain, and is, partially at least, intersected by a low ridge running across, eight to twelve miles south of Dadur. Its eastern boundary, I do not know, but, believe it to be also mountainous.

The simplest idea of this country, is, that it is the alluvial deposit washed down through the Bolan and Gundava passes, filling up a large triangular valley, which, at some early period, may have afforded channels to these rivers, from their exit from the mountains to the Indus. The intervening desert is exactly of the same formation, and would seem, simply, to be in consequence of the water being now expended in irrigation or drunk in by the soil, before reaching it.

Rain, as in Scinde, is extremely unfrequent. The soil of Gundava, is a deep light coloured, rich, dried mud like that of Scinde; but from the scarcity of water, only small portions, near the villages, are cultivated. When cultivated, however, the crops, chiefly wheat and barley, are rich and luxuriant

near the entrance of the Gundava pass, in seven marches; one hundred miles. Pitched on the northern bank of the deep channel of what seemed to have been a large mountain torrent, but, at that time nearly quite dry. Encampment here very confined, and intersected by running streams.

The soil, and general aspect, of the country traversed on this march, were very similar to Soinde; except, about thirty miles of a desert, stretching from north of Shikarpoor into the foot of the Hala mountains. South of this desert, water is very scarce, raised from deep wells by the common wheel, but, north, it is more plentiful, and found in running streams, issuing from the mountains; in, and about, Kotra, it is clear, cool and abundant.

WEATHER. On the march, and passage to Bombay, the weather was dry, and in the mornings cool; but, in Bombay, hot and close. At Vikkur, in the beginning of December, very cold during the night, sometimes with dark clouds, during the day, and during dusk. Then, rather warm about the middle of the month, but again, towards the end, the first quarter of the moon, extremely cold; one morning a piece of ice was picked up. At Ghollum Shah-ka-kote, where, we halted on the 29th, the wind all day blew keenly from the north, darkening the air with dust, to such a degree, that neither sun nor clouds could be seen, nor even, tents distinguished a hundred yards distant. The Thermometer, that day, I believe, did not rise above 62°.

At Tatta, also, on the 31st, we experienced similar weather; but with less dust; a dark cloudy bank to the north, seems to be the presage and accompaniment of these winds. Thermometer's highest diurnal range in December, 80°. Lowest at 7 A. M. 39°. Only a few drops of rain on the 29th.

In *January*, at Tatta, we had very heavy rain in the nights of the 14th and 15th; about the change of the moon; and lighter showers with close sultry weather during the day; but, with these exceptions, the month continued dry, occasionally, with high winds and dust, gradually, becoming milder till about the 23rd, the first quarter of the moon, when the nights, particularly, again, became very cold, and

The principal places, we saw, in Cutch Gundava, were Jull, Kotra, and Dadur; the two former near the entrance of the Gundava, and the latter of the Bolan pass. Kotra and Dadur appear to be pretty large towns, but of their population or manufactures, I can give no information, having been in neither of them.

so continued to the end of the month. Thermometer's highest diurnal range in January, 73° to 88°. Lowest at 7 A. M., 46° to 60°, except the 16th, the morning after the rain, when it was as high as 67°.

*February.* Again, had rain at Lukkee on the 18th, and 19th, with thunder and lightning; the rain very trifling with us, but heavy seemingly, on the other side of the mountains, and, as we afterwards heard, also at Amree, our previous encampment. Weather then close and sultry. Even, from the commencement of this month, it began to get very warm during the day; and generally speaking, gradually increased. High winds with driving dust from the 11th to the 13th, filling the tents and rendering every thing extremely uncomfortable. The only cool weather was during the first quarter of the moon, on our march from Sehwan to Larkhanu. Nights however always cool; and during the first quarter of the moon, very cold. Thermometer's highest diurnal range in February, 80° to 96°; highest during the high winds. Lowest at 6 A. M. 42° to 62°; lowest on the 26th and 27th.

*March.* Chiefly spent between Larkhanu and Gundava, near the Hala range of mountains; was generally speaking extremely warm during the day, with cool, sometimes, very cold nights, particularly, towards daylight of the 11th. Thunder, lightning and rain on the evening of the 12th, the latter very heavy a little to the north of us; and again, rather wet and boisterous at Ketcheree on that of the 18th. Thermometer's highest diurnal range, 85° to 100°. Lowest at 7 A. M., 46° to 69°.

DISEASES. On the march from Belgaum, there were no fresh admissions of moment; but, immediately, on our arrival in Bombay, Diarrhœa became frequent, termed Colica in the returns, from its resemblance to the attendant and precursor of cholera. Two hepatic cases were admitted on board the Syden, and both proved fatal, we suppose, by abscess; but with regard to the one, no post mortem examination could be made, from the very crowded state of the vessel; and the other died on board the Steamer Semiramis, after the Regiment had disembarked.

In Bombay, we had also a few cases of remitting fever, but more particularly during the last few days on board the Syden, all of which last, terminated in intermittents. The cause of this fever, we have no doubt, was the over-crowded state of the ship. It commenced, when we had been about a week on board, and disappeared immedi-

ately after the disembarkation of the Regiment. The health of others was deteriorated perhaps by the same cause. One young soldier, in particular, Private James Mortimer, after suffering for months under bowel-complaint and fever of the remitting and intermitting types, had, at last, to be sent to a fixed hospital at Bukkur.

*Bowel complaints.* In Scinde, immediately, on the arrival of the Regiment, bowel complaints under the heads, Diarrhœa, Colic and Dysentery, began to prevail, and particularly during the first ten days in December. They, then, gradually fell off till after the 25th, on the march upon Tatta, when, they again increased both in frequency and severity.

Some of the Native Regiments, on the march, suffered from Cholera, but the only case, in the Queens Royal, was on the 29th at Ghollum Shah-ka-kote. On the 28th, we had a very long, hot and dusty, fatiguing march across a desert, and just before reaching our ground, the men had to wade the river, at that season, very cold. The same night, this man went on out-lying picquet, and at 8 A. M. presented himself with a severe Diarrhœa, which immediately lapsed into Cholera. The day was extremely cold, and with the dust very much resembling a snow storm; no means we could use, in the least, restored the heat, though, the pulse was still perceptible till 9 P. M. He died at 1 A. M. of the 30th; and was buried at daylight, just as the regiment was leaving the ground.

At Tatta, in the begining of January, these bowel complaints reached their acme; always worst in the cold weather, but after that, they gradually became milder, though, they continued more or less up to the latest period, and particularly on a march. The type of the disease was chiefly Diarrhœa (serous); and in this form, also, a great many of the Officers suffered particularly at Tatta, two or three severely. A few cases, from the accompanying tenesmus with blood or slime, were denominated Dysentery, though perhaps not very correctly, and others, when pain in the bowels was a prominent symptom, were termed Colic. In almost all, the tongue was clean and healthy, the skin cool and pulse natural; the evacuations watery and passed instantaneously.

*Causes.* With regard to the causes of this disease, great variety of opinion has from time to time been entertained; but these, we consider, were the essential; the great diurnal variations of temperature in a peculiar climate. In a "peculiar climate" is certainly a very vague expression, but, I do not see, how we can come nearer. A great dif-

ference of temperature between day and night, does not, even, in a majority of instances, give rise to the epidemic Diarrhœa, and, therefore something else must have been superadded, of which, we know nothing. It has been attributed to the water, but, the prevalence of the disease from the mouth of the Hujamree, throughout the whole of Scinde and in Cutch Gundava, we think, sufficiently disproves that. Again, it has been attributed to the flour and rice not being clear of the husks; and no doubt, many suffered, who, but, for this additional, might have escaped; but still, many also suffered, who had not been subject to this cause. It has been attributed to the copper cooking pots, not having been regularly tinned. The Native Troops, and camp followers, suffered in an equal degree; and the Diarrhœa continued, after the pots had been newly tinned. Again, it has been attributed to malaria, and damp immediately under the surface. But, it continued where no dampness existed; and with regard to malaria, that may, or, not be; but, the "peculiar climate" will include this. It seems difficult, however, to conceive, how the same malaria could exist in, or follow, the camp, throughout all our wanderings.

We have said, then, the essential causes were the differences of temperature between the day and night; and these were rendered more efficient, by such causes as diminish the constitutional powers of resistance; to wit, fatigue from loss of sleep and continual long marches, and night duties, as out-lying picquets and such like. The heat of the day, keeping up a very free exhalation from the skin, we shall call the predisposing, and associate with it, loss of sleep and fatigue. The exciting, the cold chill of the night checking this exhalation, and with it, associate night duties. The cause will therefore resolve itself, simply, to checked perspiration, acting upon bodies with a peculiar predisposition; this predisposition, the effect of climate.

*Treatment.* With reference to this, we found ten grain doses of blue pill or calomel with one or two of opium, once, twice or oftener in the 24 hours, followed by castor oil with laudanum or sometimes by epsom salts, answer very well. Then hydr. c. creta with dover's powder every three or four hours, or dover's powder alone with an occasional aperient. Sometimes, blue pill and rhubarb during the first stage of convalescence.

In the Dysenteria, V. S. ad ℥viii or ℥xii preceded the above treatment, and castor oil, or sulph. magnesiæ, were more freely administered. No deaths by this disease, nor indeed, by any, in Scinde with the regiment; except, the one with cholera.

In illustration, we shall now subjoin a short abstract of a case of each.

CASE 1st. *Dysenteria Acuta.* December 17th, Private John McDonald; Complains of frequent ineffectual calls to stool with tenesmus; of a few days standing; skin cool; tongue clean; appetite pretty good; pulse natural. Statim Habt. Pil. Hydrarg. grs. x. c. opii. grs. i. *Meredie*, Ol. Ricini ℥vi. c. Tinct. opii. m. xv.

*Vesp.* V. S. ad ℥xii. Rept. Pil. Hydr. c. opii. gr. i.

18th. Blood not sizy: motions in the night frequent, watery and passed involuntarily; skin cool; pulse moderate. Calomel gr. xx. c. opii. gr. ii. *Vesp.* Rept. Calomel et opium.

19th. Motions less frequent, and not passed involuntarily, but with more tenesmus. Ol. Ricini ℥iiss. c. Tinct. Opii. m. xv; ter indies. *Vesp.* Pil Hydr. gr. x. c. Opii. gr. i.

20th. Only twice up in the night, and without tenesmus; skin cool; abdomen rather resonant. Rept. Ol. Ricini, c. Dover. Pulv. gr. x, ter indies.

21st. Hydr. c. Creta grs. vi. Pulv. Doveri, gr. v. ter indies.

23rd. Convalescent. Sent up the Indus, with the other sick in the boats.

January 5th. Duty.

CASE 2nd. *Diarrhœa.* December 8th. Private William Steel. Ætatis, 26. Five years service; three in India. Complains of frequent watery purging of eighteen hours standing; skin rather warm; tongue white; pulse eighty-four. Pil Hydr. gr. x. c. Opii. gr. i. *Meredie*, Ol. Ricini, ℥vi. c. Tinct. Opii. m. xv. *Vesp.* Pil. Hydr. grs. x. c. Opii. gr. i.

9th. Fever last night from nine P. M., preceded by shivering; skin still rather warm; pulse eighty-four; bowels only moved twice. Sulph. Magnes, ℥ii. ter indies. *Vesp.* Pil. Hydr. grs. x. c. Opii: g.. .

10th. Two motions in the night with slight tenesmus; frequent yesterday; no fever; pulse seventy-two. Ol. Ricini, ℥iii. c. Pulv: Doveri, gr. x. ter indies.

11th. Frequent loose green motions in the night. Skin cool; pulse seventy-two. Continue Ol. c. Tinct. Opii.

12th. Only once up in the night. Pil. Hydr. gr. ii. c. Rhei gr. ii. ter indies.

13th. Only twice up in the night. No tenesmus. Contin. 14th. Convalescing. Nil.

19th. Duty.

CASE 3rd. *Colica.* December 10th. Private John Coackly. Ætatis 33. Admitted with frequent watery purging of some days standing. Skin cool; tongue clean; pulse seventy-two. 9th. *Vesp.* Pil. Hydr. grs. x. c. Opii. gr. i.

10th. Ol. Ricini, ℥iii. c. Pulv. Doveri gr. x. ter indies. 11th. Feels pretty well. Pil. Hydr. gr. ii. c. Pulv. Rhei. gr. ii. ter indies. 13th. Bowels not moved since yesterday morning. Contin. pil. 14th. Convalescent ward. 15th. Duty.

Case 4th. *Febris Remittens.* December 5th. Private Joseph Cross. Ætatis 32. Admitted at four P. M. yesterday in the hot stage of fever. States that at seven A. M., he was seized with shivering, in an hour followed by increased heat. Skin still hot; tongue loaded; anorexia; thirst; bowels had been regular; purged in the night by the medicine; pulse one hundred and twenty.

Five P. M. Calomel gr. x. c. Pulv. Antimon. gr. x. et Jalapæ Comp. gr. xx. statim. 5th. Solutio. Tartarizat. 2d q. q. hora ʒii. 6th. Feels much better; bowels free; skin cool; pulse seventy-two. Sulph. Quinine, grs. ii. 2d q. q. hora.

7th. No return of fever. Contin. Ten A. M. Solutio. Tartarizat. at antea. *Vesp.* Calomel, gr. iv. Pulv. Antimon gr. x.

8th. Fever returned at eight A M. with shivering. Sweating from eleven P. M. till two A. M. Skin still warm; tongue tolerable; thirst; anorexia; bowels open; pulse ninety-six. Sulph. Magnes ʒiv. statim. dein, Sulph. Quininæ gr. ii. 2d q. q hora.

9th. Apyrexia. Contin. Quininæ. 10th, Contin. 12th, duty.

Case 5th. *Febris Intermittens Tertian.* December 6th. Private William Haywood. Ætatis 34. Admitted yesterday at eleven A. M., in the cold stage of ague. Sweating in the night. Skin now cool; tongue clean; pulse sixty-eight. Says he had a similar attack two days ago. Bowels freely moved in the night. 6th. *Noon,* Calomel gr. vi. c. Pulv. Antimon gr. x. et Jalap gr. x. *Vesp.* Calomel gr. iv. c. Pulv. Antimon. gr. x. 7th, Solut. Tartarizat. 2nd q. q. hora ʒii. 8th, Apyrexia. Sulph. Quinin gr. ii. 2nd q. q. hora. 9th, Convalescent; Contin. 12th, Duty.

Camp Kotra,
Near Gunja Gundava;
30th March, 1839.

## Article XI.

### *Medical History of H. M. 2nd or Queen's Royal Regiment, from the 1st of April, 1839, to the 31st March, 1840, — during the Campaign in Affghanistan.* By R. H. Hunter, Esq.

Presented August 1840.

The annual report of H. M. 17th Regiment, as well as that of the 2nd Queen's Royal, falls perhaps to my lot this year; being now the only medical officer, who has been with these regiments, during the late campaign in Scinde, Affghanistan, and Beloochistan. But as with the former, I have had no immediate connection, till within the last six weeks, when the campaign was drawing to a close, I can only make an occasional reference to it. As the 17th, however, has been closely allied with the Queen's Royal, during almost the whole period embraced in this report, the history of the one, will, in all material points, be applicable to the other.

The 2nd or Queen's Royal, in company with H. M. 17th Regiment, left Kotree in Cutch Gundava, on the 31st March, and after a very fatiguing march, along the base of the Hala mountains, reached Dadur, near the foot of the Bolan Pass, on the 5th of April; 72 miles. Here we halted some days, waiting for supplies from Shikarpoor, by the eastern route. On the 9th, the 17th were detached up the Bolan, with the Artillery; and on the 12th, the Queen's Royal followed, with Head Quarters and the Cavalry. Halted one day at Siriab in Sowle. On the 26th, again got up with the 17th and Artillery, just as they were getting clear of the Kojeh Pass, and the following evening, continued our march together upon Khandár, where we arrived (227 miles) on the 4th of May; a week after the Bengal Column.

* The whole of the countries, traversed on this route, from Kotree

* *Extract from the Author's Annual Statistical Report.*

Bolan Pass. The Bolan pass forming the only direct communication between Cutch Gundava and Affghanistan or rather Sewestan, would seem to

to Khandár, with the exception perhaps of Pisheen, agreed in their aridity and desert aspect; as also in the nature of their soil, which is a deep, light coloured, rich, alluvial mud, inclosed in valleys between abrupt high barren mountains; but, their elevation above the level of the sea, varies very materially. Cutch Gundava, that is,

have been wrought out, in the course of ages, by streams of water issuing from the high mountains to the south of Sowle, and may be described, to be the partially dried bed of a mountain torrent. It commences four or five miles West of Dadur, and taking a pretty straight course north and west, rises with a gradual, but rather rapid ascent, through a very high and deep ridge of mountains, for about sixty miles, and then, terminates rather abruptly, in the upper part of the valley of Sowle. This pass, at the entrance, and indeed for the first two marches, is, in many places, not more than twenty to thirty paces across, with high mountains on each side, rising almost perpendicular, or, at some parts, overhanging, with scarcely a trace of vegetation, upon them, of any kind.

The third march is more open, and has only a slight ascent, across a broad stony bed or valley. This valley, though quite dry, is every where covered over with smooth stones, like the dry bed of a river. It is situated, apparently, between two ridges of mountains, the lower of which, is towards Gundava, and the higher, towards Sowle. But the fourth, fifth, and particularly the sixth marches, are again narrow, stony, with a much greater, though gradual ascent. — In this Pass, numbers of half naked people were seen every where issuing from the mountains and rocks, into the rear and carrying off, the abandoned camels, horses, grain, &c; but, no where did we observe even the trace of a village or hut. We saw a burial ground near the termination of the third march, which, tradition says was the place of a battle at some former period, between two tribes or bands of robbers. This is "Beebee Nanee," at the foot of the higher range of mountains where I believe, there is now a sort of halting place established. Good water is abundant and throughout the Bolan, with the exception of the last march, that is, at Munziljah, or top of the Pass. Here we found none, nor within twelve miles of it, on either side; but we were afterwards told by Natives, that there was plenty a mile or so off to the east, before we got out of the Pass: this is very probable, as we were attacked from that side, — where they must have had water.

Sewestan, Affghanistan and Beloochistan. Affghanistan, including Sewestan, and Affghanistan Proper, and comprehended in from about 30° to 34° north latitude, and 65° to 70° east longitude; and Beloochistan, the upper half, at least, comprehended in from 27° to 30°, north latitude, and 65° to 67° east longitude, is an immense tract of high, rugged mountainous country, intersected by deep ravines and alluvial plains or valleys of various breadth, but seldom exceeding three to six miles.

In Affghanistan and Sewestan, these valleys, west of Ghuznee, converge, chiefly, more or less from the eastward upon the two great or base plains, Pisheen and Khandár; both of which, with a gradual slope, open out to the westward. The principal exceptions are the valley of Sowle, which collect-

from Kotree to Dadur, like Scinde, is quite a low country, whereas the valleys of Sowle and Pisheen, above the Bolan Pass, have an elevation of between five and six thousand feet; and that of Khandár, of four thousand. — In consequence, the temperature of the nights, varied very much, but scarcely so, the days, which were every where

ing, as it were, the valleys from the south, takes a northerly, and afterwards a north easterly direction, till it becomes continuous with the upper portion of Pisheen; and some broad valleys, which run nearly south from Ghuznee to the Toorka Hills, where they terminate in an immense salt lake. The valleys of all these countries, are generally quite flat, and the mountains rise abruptly from them. The former are every where covered with low dry looking shrubs, which afford excellent food for camels; but the mountains are barren, and towards Ghuznee and Cabul (to the north-west) more or less covered, or streaked with snow, all the year round. Sewestan, and a great part of Affghanistan, are very arid and desert. Twenty or thirty miles may often be passed over, without being able to find a drop of water; and rain much west of Ghuznee, is I believe, scarcely known.

VALLEY OF SHAWL. Shawl or Sowle is an alluvial plain or valley, from three to six or eight miles broad, and six thousand feet above the level of the sea. It commences, a little to the south-west of the exit from the Bolan Pass, takes a course nearly north, between two steep, high, barren ridges of mountains to Kwettah, twenty-seven miles, then bending to the west, round the extremity of the western ridges, it joins another nearly parallel valley coming from Moostong. Again, winding to the east and northward, twenty-two miles, it opens out into a broad, waste looking plain, running about east, north-east, nearly parallel to, but at this part, separated from, the Pisheen valley by a low narrow hilly reef or ridge, through which, the road to Khandár passes.

The whole of Sowle, is very waste, and the villages few and far between. The first seventeen miles, indeed, to Siriab, is a perfect desert, quite destitute of water, but like the rest of Affghanistan, where uncultivated, is clothed with low, dry looking, camel shrubs. About Siriab, but particularly about Kwettah seven miles further north, water is tolerably plenty, with here and there marks of cultivation, and clusters of green fruit trees, inclosed like little gardens; which in April afforded a cheerful relief to the otherwise dreary aspect of the country. Ketchella and Hydarsy, the first eleven, and the last twenty miles from Kwettah, were the only other villages, we came to, in this valley. At the former, there were a few clusters of those green fruit trees; with a tolerable supply of good water at both, but otherwise, all round seemed barren. These villages were deserted, as we passed up, and almost every thing green had been consumed, by the columns in advance, as forage; which no doubt, rendered them still more desolate.

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KOJEH MOUNTAINS AND GAUTEE HILLS. The first of these, is a high mountain range, which bounds the Pisheen valley on the north, running with that valley nearly east and west. The last is rather a ridge of fantastically peak-

very hot. The Thermometer rising to 100°, 105° or even 110°, in the tents.

The mornings in Sowle and Pisheen, were cold, raw and chilly, (the snow had not altogether disappeared from the mountains of the former), and even from the Kojeh mountains to Khandár, though

ed hills, thirty miles in depth, and every where traversed by barren stony valleys, covered with low prickly camel shrubs. Between, is a dry dusty plain, twenty miles in breadth, partially divided, here and there, by high mountains.

The Kojeh range, towards Pisheen, rises one thousand feet or upwards above the plain below, and towards Khandár nearly three thousand; at least, these plains north of the Kojeh, are reckoned two thousand feet lower than Pisheen. T oad, twelve miles across from Abdullah Khan's Fort, is perhaps after all, r confined than difficult, but, from the Khandár side, it is very steep.

There is good water in abundance, almost every where, in the Kojeh Pass, but from that to the Gautee Hills, there is only one small stream, about half way. This stream, which was cut off by Haji Khan's people, as we went up, answers to the "Kudny" in the maps, and like the rest, from the foot of the Kojeh mountains to near Khandár, is more or less brackish.

At the entrance of the Gautee ridge, there was also a stream cut off by the enemy, and in consequence we only found salt water, till towards evening, when some good wells or tanks, were discovered, three or four miles off. About here, also, were traces of cultivation, and plenty of forage for the horses, but no where else on this line from Abdullah Khan's Fort on the borders of Pisheen.

Amongst the Gautee hills, we found only two very small streams; the one ten the other twenty-two miles from the entrance.

From Larkhanu to the Kojeh mountains, might be called a desert, but this from the Kojeh mountains to near Khandár, is certainly, the desert of the deserts.

To talk of the population of such a country would be a farce; some two or three thousand came out from Khandár, as far as the Gautee hills, to oppose Sir John Keane, with the Bengal Column, and were there joined or in communication with Haji Khan's people, the mountain robbers; but their commissariat soon broke down, and they dispersed, plundering on their return, the villages bordering upon Khandár.

The Kojeh mountains and Gautee hills might have been turned, thirty miles or so to the westward, but in that direction, the country is, if possible, still more desolate, and water so scarce, that many of the marches must have been twenty or thirty miles. It is however, the kafila route (camel caravan), but they make long marches, and camel forage is plenty every where. From the Gautee hills, opens a comparatively well cultivated plain, with two or three villages, along which, the route passes for about fourteen miles, then, turning round the extremity of the hills to the right, it enters upon the valley of Khandár.

reckoned nearly two thousand feet lower; but below the Bolan Pass, in Gundava, they were warm and close. Here, also, we had a storm of wind and dust, with heavy drops of rain, on the evening of the 3rd of April, and a heavy shower with thunder and lightning on the afternoon of the 4th; but otherwise, the weather throughout was quite dry. Themometer's highest diurnal range in April, 112°; lowest at 6 A. M. 63°. Water on this line is found often only at great distances, and in consequence, the marches are very long, particularly in Cutch Gundava, the upper part of the Bolan, and of Sowle, and from the Kojeh mountains to Khandár. It is generally, however, of excellent quality, except at the part last named, where it is more or less brackish.

At Khandár, from the loss of horses on the march across the deserts of Sewestan, and mountains of Kojeh, and the wretched condition of those which remained, together with the scarcity of commissariat supplies, and other contingencies, it was found necessary, to halt for a couple of months.

Khandár is a tolerably sized city, the second in the kingdom, and the capital of the West, and may contain, I should think, ten to fifteen thousand inhabitants. It is surrounded by a thick mud wall, with double gates, loop holes, and towers, and may be, two miles in circumference. It is situated on a level plain, of the alluvial formation, four to six or eight miles in breadth, and closely bounded by high barren mountains. This plain, in the vicinity of Khandár, is comparatively well cultivated, and scattered over with fine gardens, and orchards, teeming with grapes, apricots, and cherries. It is abundantly supplied with excellent water, conveyed by the common water courses, from a large stream, which passes in a south-westerly direction, three or four miles, N. N. W. of the city, on its way to the river Helmond. This stream is not in the Khandár valley, but in one, which has a free communication with it, through an opening between the mountains. Khandár is said to possess a fine climate during the greater part of the year, but whilst we were there, in May and June, it was a perfect furnace. The Queen's Royal and 17th were encamped together, nearly north and south, on a recently cut clover-field, about five hundred yards, to the south-west of the city; having extensive gardens encircling their right and rear; those to the rear a quarter of a mile distant, or so, and all fenced by high mud walls.

The ground, though dry on the surface, had been recently irrigated, and was nearly so again, by accident, when we were there, but it was clean and well defended from the dust. In May, the weather

was excessively hot, during the day, but cold and chilly in the nights; in the evening often with a dampness, which kept the smoke densely spread over the surface till near 9 P. M. The winds were variable, all round the compass, but the only cool, were from the south-west. Thermometer's highest diurnal range, 98° to 108°, except during the south-west winds, 87° to 98°; lowest at 6 A. M. 50° to 70°; during the south-west winds, 58° to 60°. The first nine days of June, were very hot, with the wind chiefly from the southward. From the 17th to the 25th, again, excessively hot with high squalls and gusts of hot burning winds both day and night, chiefly from the northward. 25th, Hot wind from the southward. Thermometer's highest diurnal range, during the first period, 101° to 105°; lowest at 7 A. M., 60° to 64°. During the second period highest, 94° to 100°; lowest at 7 A. M., 59° to 70°. During the third, 104° to 110°, and from 60° to 68°. No rain in Khandár.

On the 30th of June, General Willshire's Division, including the Queen's Royal, and 17th Regiments, left Khandár; Head Quarters preceding us three days; the Shah two days; and Brigadier Gordon's Division, one day. Reached Kelat-i-Ghilgee, a small hill on which, at some former period, there had been a fort, on the 6th of July, eighty-three miles; and Kharabagh, ninety-three miles further, on the 19th. From this, made a forced march, eighteen miles, on the morning of the 20th, and again another in the evening, seven miles to Nannee, to join Sir John Keane and the Shah. Bivouacked a few hours in anticipation (scarcely so) of an attack from the enemy, whose out-posts were reported to have been in sight, all the previous day; and at day-light of the 21st, marched upon Ghuznee, twelve miles, General Willshire's Division forming the left and rear.

At half past eight, a cannonading commenced in the direction of that fortress, and we were halted till a body of our Cavalry passed far to the rear and returned; when (about 11 A. M.) we again resumed our march, passed to the west of Ghuznee, and pitched upon some dry stubble heights, about a mile from the citadel, which at this side appears very high. At 5 P. M. changed position to the east, the Queen's Royal, and 17th Regiments crossing the river, and passing over the hills, on the extremity of which the fortress is built. The distance we reckoned at seven miles; but the march was tedious, from the steepness of the hills, the river and the numerous large water courses, we had to cross.

Reached the summit of the ridge just at dark; and immediately

after, a rapid firing from jinjalls, guns, &c., was for some time kept up all round the Fort, wherever they had a piece to fire; the garrison supposing, as we afterwards learnt, that the army was off to Cabool. Bivouacked about a mile from the Cabool gate, on some hard dry dusty ground, and next morning pitched tents, and set about preparations for the assault, the following morning. About noon, a rabble army, reckoned at 1500, under a priest, displaying several standards, suddenly made its appearance on the hills to the eastward, a mile or two distant from our camp; but it was soon driven away again by the Shah's horse and some artillery. Four standards were captured, and a great many prisoners, of whom, the Shah decapitated, about fifty the same evening.

At 3 A.M. of the 23d, precisely, the feint with musketry, in the gardens to the south of the city, commenced; and about ten minutes after, both our batteries, mounting in all twenty-eight guns, were opened upon the walls, &c., about the Cabool gate, the place of attack. In this fire, the explosion at the gate was not distinguished, and the fire itself was, scarcely, if at all, returned; the Garrison having had only seven guns altogether, I believe, and one of these, the large one, could only be fired twice in twenty four hours. One very neat little gun, they had, covering the approach to the Cabool gate; but this when screwed to the utmost, was not depressed within a quarter a mile of it. The gate was most effectually blown up, by the bags of gunpowder laid in front of it, suggested and carried into execution by Captain Thompson of the Bengal Engineers; and immediately after, the storming party consisting of the light companies of the four European Regiments, that of the Queen's as senior leading, rushed in; some little check was experienced by the advancing columns; after this, by mistake, the retreat was sounded, but finding, the light companies did not return, the Queen's Royal the leading column, hesitated. Immediately after, a cheer was heard from within, the advance was then sounded, and after a little struggling and clashing of bayonets and swords in the gateway, all combined opposition was at an end, though several afterwards received sabre wounds, from time, to time, when any intervals occurred between the advancing columns, companies or sections; or where there was any struggling from the fugitives trying to escape by the gateway, all the others having been built up previously by the Garrison.

At a quarter to four the citadel also was in our possession. No defence was made there—great numbers of the enemy, were shot or bayoneted inside the town, expecting no quarter as is usual among these nations, and therefore fighting to the last, when they saw no means of

escape; besides the killed, with shot and shells, and one or two explosions of magazines. Also, numbers were cut off, who had escaped over the walls by means of ropes, &c., by the cavalry outside. In all, I believe, about six hundred were picked up and buried. Hyder Khan, the chief, son of Dost Mahomed, was taken prisoner, and great numbers of his followers. The loss on our side, was very trifling. The Queen's lost most, and that only amounted to three killed, and three, who afterwards died of their wounds. The list of wounded indeed appears large, nearly two hundred in all; but, in these days we were young soldiers, and all scratches were counted. Besides, a third or more, were from falling stones or timber in the crumbling gateway. The Queen's also lost two men on the ground where we bivouacked, the night of the 20th. They were in charge of camels and their bodies were found in a dry well, on our return in September.

From Khandár to Ghuznee, two hundred and eight miles, the route, with the exception of the first fifty miles, lies up an alluvial valley, the lower thirds of which, are watered by the river Turnook. At first, this valley is narrow, deep between the mountains, and the water rather scant and muddy; but it gradually expands, becoming more and more fertile, and particularly above Mookloor. We have discribed this, as one valley, for brevity, but there are two valleys distinct, an upper and a lower. The upper or broad valley of Mookloor, runs in a southerly direction, whilst the lower, or narrow Turnook, branches off from it, to the S. W. On this line, from the time of entering the Ghilgee country, there is neither hut nor village, but the valley abounds with small square mud forts, having numerous towers, which seem to answer the purpose of houses. This is the only populous district we met with, except in the immediate vicinity of the large towns. The soil in these valleys, is the same light coloured mud, as is met with all over Affghanistan, Gundava, and Scinde; except, just where the road comes upon the Turnook, where it is blacker and deeper.

This is about the same height above the level of the sea as Khandár, but from it, there is a gradual ascent all the way to Ghuznee. Kelat-i-Ghilgee is two thousand, and Ghuznee four thousand feet higher than Khandár. In consequence, the climate during the month varied very greatly. Near Khandár the thermometer's highest diurnal range was 101° to 106.°; the lowest at 6 A. M., 68° to 70°—at Ghuznee, 87° to 98°; and 54° to 67.° There was thunder and lightning, and one march a head of us, a very heavy fall of rain near Mookloor; and at Ghuznee, one night, very loud and rapid thunder. Rain

also in the neighbourhood, but very little in camp. These were at the new and full moon, respectively.

Ghuznee is situated at the convergence of two valleys, which unite to form the great valley of Mookloor; upon a high rock, half detached, by a low narrow neck, from a mountain ridge, which rises with a gradual slope to the northward; and consists of a citadel, built upon the summit, and a small walled town, or large village encircling its southern and eastern base. It is reckoned a place of considerable strength. What rendered it more so, in the late campaign, was the want of breaching guns, the only three brought into the country, having been left at Khandár, for want of carriage; and the scarcity of provisions for such a Xerxian army, in a desolate country. The population of Ghuznee, I estimate at three to five thousand; but there is besides, old Ghuznee, two miles or so, up the eastern valley, which is now decayed into a large village, containing perhaps one or two thousand inhabitants. All the valleys in the vicinity of Ghuznee, are in a very tolerable state of cultivation, and particularly the one to the west, through which a large clear stream flows, washing close in front of the fortress.

Having disposed of our serious wound cases, in the citadel of Ghuznee, under staff surgeon Pinhey, H. C. service; and as many of our worst of sick, as could be accommodated; the army resumed its march upon Cabool, in two divisions. Head Quarters with all the Bengal portion, and almost all the Artillery and Cavalry, on the 30th of July; and General Willshire, with the Bombay Infantry, and a detachment of the Artillery and Irregular Horse, in company with the Shah, on the 31st. General Willshire's Division reached Shaikabad, forty four miles, on the 3rd August; there we found Sir John Keane halted. At the same time, heard that Dost Mahomed had fled, leaving all his guns, fourteen miles or so from Cabool, and that Captain Outram, H. C. service, had volunteered to pursue. A party was sent on, to secure the guns, and the following morning, the whole army marched to Maidan, eighteen miles. This day, in consequence of the immense number of camels, and the narrowness of the pass at the Maidan river, all the tents were not up, till the evening. Next morning, marched twelve miles, and pitched upon an acclivity near a small stream, and on the 6th, again twelve miles; the last three over a beautiful, well-watered, and tolerably cultivated plain, thickly strewed over with gardens, and orchards abounding with fruit. The grapes were then in season, and afforded a grateful refreshment to the troops on the march. Encamped at the foot of a chain of hills, which separates this valley from Cabool, on dry but

recently cultivated grounds, intersected by streams of running water.

On the 10th, moved back upon the Ghuznee road, five miles from Cabool, and again encamped upon similiar ground, but at a distance from the hills. On the 23rd, again moved, passed through a narrow gorge immediately in front of Cabool, much confined by walls, gardens, and streams of water. Passed round the outskirts of the city, amongst gardens, trees, and well cultivated fields, three miles, on the Jellalabad road, and encamped upon some heights, between a swampy plain, and a low ridge of stony hills, — the rear of the 2nd or Queen's Royal, and of H. M. 17th Regiments resting on these last. Here, we remained till the 6th of September, when the Bombay column, consisting of the two squadrons of H. M. 4th Light Dragoons, the first Light (Native) Cavalry, two Troops of Horse Artillery, one company of Native Foot Artillery; H. M. 2nd or Queen's Royal, and 17th Regiments, and the 19th Native Infantry with some Irregular Horse, under General Willshire, began to retrace their steps towards the provinces.

On the 17th, halted between our two former encampments, on the plain separated by the narrow chain of mountains from Cabool, near some swamps. Divided the long march between Maidan, and Shaikabad into two. Halted, one day, at the place last named, and again reached Ghuznee on the 26th, where we halted two days, receiving back our sick and wounded, and getting commissariat supplies out of the citadel, for the march upon Kwettah.

To Cabool, the route from Ghuznee passing through the old city, rises over some irregular stony heights, through mountain passes, for the first ten miles, then down an irregular valley from four to six miles broad, having a descent all the way to Cabool. This valley, closely bounded on the east and west by high barren mountains, like the rest of Affghanistan, is partly arable, and partly not; the arable and the barren alternately crossing it. The former consists of the alluvial banks of the streams, which have generally an easterly direction, passing through between the high mountains to the right, to form or join the Logur river; the latter of irregular hard or stony heights. The last stream, and smallest, crossing to the west fifteen miles from Cabool, takes a northerly direction, and at first, rather westerly, but afterwards, I think, it bends round some low hills, into the valley, formerly mentioned, as next to that of Cabool.

The soil of this last valley, or broad plain, is again, of the light coloured dry dusty mud, as are also all the valleys about Cabool; only, in the immediate vicinity of the city, the soil is dark, from more

frequent cultivation, and the consequent admixture of vegetable matter.

The swampy plain formerly alluded to, extends in an easterly direction along the base of the southern mountains, nearly, from the walls of the citadel, for some miles down the valley, towards Jellabad. Besides this, there are other swampy grounds, immediately to the north of the city; whilst water in abundance flows in large streams, through the narrow gorge, and amongst the trees and gardens on the west. The south rests upon the chain of high mountains.

For me, to attempt, to give a farther description of Cabool, would be folly, having only once been within its walls. I may say, however, it consists of a citadel, built on a low promontory of a high mountain, with a large walled town, extending from and encircling its western base. Its markets, when we were there in August and September, abounded with fruit,—apples, pears, peaches, and a great variety of grapes.

Cabool seems to be very populous. Its covered bazaars were literally choked with a living mass; it may certainly contain fifty-thousand inhabitants. We have already said, Ghuznee is four-thousand feet higher than Khandár, that is, eight thousand above the level of the sea, but the highest point we passed over, is at the top of the pass, ten miles on the Cabool side of it. Cabool itself is six thousand, so, that on this route there is a descent of two-thousand feet, that is, in the plains, for the hills rather rise, in an inverse ratio to the north and west, till they terminate in the Hindu Kosh.

Snow was first observed to streak the mountains on this line from Maidan. On those immediately to the west of Cabool, it was observed in the chasms, all August; and on the 24th of that month, about full moon, during the thunder storm, with heavy rain in the plains, they became partially covered; the snow remaining till the following day.

During these storms towards evening, the weather was extremely cold, and every kind of warm clothing in requisition. We had also distant thunder and lightning with sprinklings of rain, on the afternoon of the 23rd and 25th; but otherwise, the weather during this month was quite dry; generally hot during the day, but cold at night. Thermometer's highest diurnal range, 75° to 98°, lowest at 7 A. M. 46° to 64°. Winds variable, but generally from the north or east; strongest from the former, but coldest from the latter.

In September, during the fifteen days we remained at Cabool, the weather was also dry with the exception of the afternoon of

the 7th, 8th, and 9th, ( change of the Moon ) when we had strong winds and clouds of dust, followed by thunder, and cold rain; the hills to the west, again, becoming covered with snow, which lay till the weather settled. Thermometer's highest diurnal range, 81° to 96° lowest at 7 A. M. 48° to 59°. Winds generally from the N. E.; the snow from the N. W.

During the last fifteen days of September, on our march to, and at, Ghuznee, the nights particularly began to get rapidly colder, and the mornings of the 29th, and 30th, resembled winter mornings in England. Ice was first observed on the puddles, on the morning of the 29th, as we were leaving Ghuznee. The weather, however, continued dry, with the exception of a few drops of rain on the evening of the 25th, about full moon. Occasionally, also, we had high winds, and dust, particularly on the morning of the 26th; and on the afternoon of the 27th at Ghuznee, it was scarcely possible to find one's way through the camp. Thermometer's highest diurnal range, 78° to 98°, lowest at 7 A. M. 42° to 59°. Winds variable; high winds with dust from the southward; cold from the north, and west.

The supplies and other arrangements having been completed at Ghuznee, as far as means would permit, General Willshire resumed his homeward march with the Bombay column, meaning to try the direct route to Kwettah, over the mountains; and this, he was the more anxious to do, as in addition to the greater distance round by Khandár, that line had already been exhausted of forage and supplies of every kind, insomuch that a detachment coming from Khandár; had been obliged to return from Kelat-i-Ghilgee, to avoid starvation.

We left Ghuznee on the 29th of Septembér, and on the 8th October reached the western extremity of the great salt lake, about ninety miles due south, in nine marches, having halted one day at Kela Buksheh. On the 9th, crossed a low hilly ridge, running nearly east and west, into the Torkanee valley, twelve miles; where we were detained one or two days with detachments, out with Captain Outram, amongst the Ghilgee forts.

On the 11th, sending the Light Cavalry by a pass and route directly in front of us, fearing that forage for all could not be procured in one line, General Willshire with the remainder, turned eight miles to the westward; and on the 13th, crossed a treble ridge of steep rocky hills to "Ghondam" (the foot of a hill so called, not a village) where we had again to halt a day to rest the cattle; the artillery, park, &c. not having got up till some time in the night.

On the 15th and 16th, crossed a deeper ridge, through an irregular low hilly pass, into the upper part of the valley of the Urghesan, twenty-four miles; where we again halted a day, for detachments out with Captain Outram. On the 18th, entered the nearly dry bed of the Urghesan, deep between the mountains, ten miles. On the 19th, marched up that bed in a south easterly direction, but winding, crossing, and recrossing the stream, eleven miles to Zawa (not a village). On this line, indeed, there is scarcely the vestige of an inhabitant, from the Urghesan, to the Lorah, or indeed, we might almost say, from the Torkanee valley to the Lorah.

On the 20th, leaving the Urghesan near its source, we turned to the southward over the mountains, away down amongst some low hills; where there was a little water in a stream, fifteen miles. This I think corresponds to the head of the Kuduny in the maps. Three miles further south, in the midst of the same low hilly ridge, is a small nearly circular plain, half a mile or so in diameter, well cultivated, resembling a garden in the wilderness. Through this, we passed on the 21st, and pitched by a nearly dry brook, in more open ground, nine or ten miles; and again, the following day, 22nd, over the most difficult ridge of all, for guns, twelve miles, down into the upper portion of a nearly dry bason-like bed of a river, surrounded by hills. This is Takurak, at the root of the Kojeh range of mountains.

Disappointed of supplies here, and forage of every kind, and fearing, the horses, which had already been subsisting for many days, almost entirely upon a scanty allowance of grain, might perish; General Willshire detached on, the artillery and cavalry with a suitable escort, but halted the infantry one day. The light cavalry had also been here, but finding no forage, had passed on towards Pisheen; taking the route south westward by Mishkee. Resuming our march on the 24th, we wound out of this bason, down the dry bed, round the eastern extremity of the Kojeh range, then over some heights, down to another bed, and so on, into a pretty open valley, where was a stream of water, twelve miles. Next day, the 25th, we crossed another ridge, nine miles, to near "Toba," where is a small fort belonging to Haji Khan Khauker, which made some demonstration at first, but was immediately evacuated, on the appearance of a detachment sent against it, leaving only, however, a little chopped straw (bousa) for the horses.

On the 26th, turning towards the south west, we ascended a sort of pass, three or four miles, and entered again, the bed of a mountain torrent; down which, we had a rapid descent for ten miles (the descent was estimated at near two thousand feet), and there pitched,

three or four miles from where it joins the "Lorah" near some villages and cultivated grounds; here we obtained plenty of forage for the cattle, and all our difficulties were over. Next day, the 27th, we joined the detached artillery, cavalry, &c., nine miles, or so, nearly west, down the bed or valley of the Lorah. On the 28th, keeping down the same bed, closely confined by hills, nine miles, we opened upon the valley of Pisheen, at its western extremity; marched six miles farther, and encamped. And the following day, 29th, fifteen miles to "Hydarsy," where we came upon our old route, and reached Kwettah on the 31st, twenty-three miles.

Total distance from Ghuznee by this route, 300 miles; by Khandár, 350. From Ghuznee to the great salt lake, the direct route to Kwettah, lies down the great valley, which we have already called the valley of Mookloor, keeping at all events for the first twenty miles or so, near the western hills, as it is quite destitute of water near the eastern. This valley or broad alluvial plain, like the rest of the plains of Affghanistan, is of the light coloured dried muddy formation, clothed with a variety of dry, withered looking, camel shrubs.

It may be said, to commence at Ghuznee, and to run in a nearly southerly direction till terminated by the salt lake, and a low ridge of hills, which separates it (all but at the south western angle) from the valley of Torkanee. The upper parts are partially divided longitudinaly by mountain ridges, giving it the appearance of two distinct valleys; well watered comparatively, and in good cultivation, particularly along the western route; though water for an army, is found at more convenient distances by the eastern. The lower parts are more arid and desolate;—indeed, the greater portion below Mookloor, is a vast sterile plain. Water for an army, is however, attainable at pretty convenient distances even here. Near the salt lake, it is brackish generally, but there is good water at the encamping ground, near its western extremity: — we experienced no want.

From the salt lake, southward, all the mountain ridges, and intervening valleys or plains, radiate off to the westward, the latter converging towards the great valleys of Khandár, and Pisheen. Across the root of these radii, is continued this route, as far as the Lorah, to avoid the impracticable ascents and descents further to the westward. The Torkanee valley, the first and only one where there is any cultivation, to speak of, is situated between the low salt lake ridge, and a precipitous treble ridge to the southward.

It seems to be lower a little than the salt water lake; rather populous, well watered, and though small, in very tolerable cultivation,

comparatively; but all the spare grain had been drawn off to Khandár, 100 miles or so to the westward, during the time the army was there. From Torkanee, ridge succeeds ridge, with narrow, nearly barren valleys between, all the way to the Lorah. In the Urghesan and Toba valleys, perhaps, a little may be had, but scarcely forage, even, any where else. Water however is found at tolerably convenient distances, but is more or less brackish, after leaving the Urghesan. No army, I should think, with artillery will ever try the route again, and in an opposite direction, it is quite impracticable. How we got over it, is now indeed surprizing, and with a loss of horses, trifling to that, between Dadur and Khandár, where there are no natural difficulties, except the pass of the Kojeh mountains; and the Kojeh Pass would make little more than a march, in the route, we have now described.

The valley of the Lorah, is little more than the dried bed of that river, which arising out from an immense mountain mass, a little to the east of where the stream we came down, joins it, runs in a nearly westerly direction till it rather abruptly opens upon the vast plain of Pisheen. Here and there, however, along the banks, and between the stream and the hills, are many cultivated spots, several villages, and a few rather pretty forts and other buildings, surrounded with gardens and orchards. The valley of the Lorah, is the chief seat of the Khan of the Kaukers.

Pisheen is a vast alluvial plain, from ten to twenty miles in breadth, clothed chiefly with dry looking camel shrubs, and abruptly bounded north and south, by high barren mountains. Through it, nearly from east to west, flows the Lorah, the stream or small river just now described. Pisheen is only very partially cultivated, and to what we were led to anticipate, half a desert, though much superior to any thing we saw, south of Khandár.

Over it are thinly scattered small villages or square mud forts, but its population, I have no idea of. It cannot be, however, very great. The natives hitherto have been much oppressed by the chief of the Kaukers, who had a pretty strong fort near its eastern extremity, but which was destroyed by the Bombay column, on our return; apparently, much to their satisfaction.

Ghuznee, we have said, is eight thousand feet above the level of the sea, and Toba, the narrow valley next to the Lorah, is scarcely less, so, that on this line there is little descent upon the whole, for the first two hundred and twenty miles. Some parts are higher and some lower: the last is confined to the upper narrow portion of the valley of the Urghesan. Ice we first observed on leaving Ghuznee; but descend-

ing a little the first eight or ten marches, the weather became evidently milder. It was again observed at the western extremity of the great salt lake, but nothing to speak of, till ascending the bed of the Urghesan, and from that to Toba. Here, the water in the basons, in the tents, was completely frozen in the morning. On reaching the Lorah, the weather became rather hot in the middle of the day, and the flies returned, but the nights still continued cold. No rain or snow on this march. Thermometer's highest diurnal range in October, 84°, lowest at 6 A. M. 24°. Winds variable, but generally, northly.

Halted at Kwettah only two days. On the afternoon of the 3rd of November, the Queen's Royal, II. M. 17th Regiment, and the 31st Bengal N. I., together with a detachment of two guns, and about forty artillery men of the Bombay Horse Artillery, four of the Shah's from Kwettah, and the Bombay Sappers and Miners, commenced the march, under Brigadier Baumgardt, towards Kelat, the capital of Beloochistan, and strong hold of our most daring and troublesome foes, the Belooches.

The south of Affghanistan, at best a desert, had become so exhausted, that it was found impossible to take on a larger force, and even with what we had, to leave every thing behind, not absolutely wanted, and reduce the ammunition to the lowest point. The sick and wounded of the Queen's and 17th, having been detached, to go down the Bolan, with the rest of the Bombay column; the two corps mustered little more than six hundred of all ranks, between them. In the whole force, we had short of one thousand bayonets, and without cavalry or large guns, from the wretched condition of the horses, so recently off their march, over the mountains from Ghuznee, and the scarcity or nearly total want of forage on the route towards Kelat.

On the 4th, we were unexpectedly joined by Major General Willshire. On the 6th, reached Moostong. This was some miles out of our way to the eastward, but we were obliged, for want of supplies, or carriage, to carry on, for more than a few days.

Halted on the 8th at Moostong. On the 9th, finding we could not take the direct route, for want of water, we made a march to the westward into a parallel valley, ten miles. Reached Moonguhar, forty-three miles from Moostong, on the 11th; and on the 12th, marched eighteen miles, to within seven miles of Kelat. This morning, before starting, all muskets were loaded, and a strong rear guard, was left to watch a more direct route from Kelat, which opened to the left and rear of our camp. On the march, we heard that the Khan

had been joined by a reinforcement of two thousand, sent up from Dadur, mounted upon camels. This was hailed, as very agreeable news, for we were sadly deficient in these useful animals.

We came upon our new ground about the middle of the day, without having seen any thing; but a report was in circulation, that Captain Outram with some Irregular Horse, which had joined us the previous day, had given chase to a few mounted Beloochees. This night, in particular, every precaution was taken to guard the camp from surprize; and about 3 A. M. the following morning, the 13th of November, we got upon our march as usual, nothing seemingly in any way to interfere with our progress; in so much, that the route by which we should follow the rest of the army, whether back by Kwettah or down the Gundava pass, became the subject of conversation, many having left most of their valuables at Kwettah.

When about four and a half miles, and just before coming to a pass, through a low irregular hilly ridge, a number of horse-men were observed on our right, to dash forward from a low mud building, on the opposite side of a large dried bed of a river, along the bank parallel with the head of the column, or rather in advance; the leader with a white turban mistaken for a hat, shooting across in front of them; which gave rise to a simultaneous exclamation from many voices, "look at Outram." (Captain Outram with some of the Irregular Horse was meant). When, suddenly, they divided, one portion galloping back, parallel to the rear; and the other, close to the bank of the dried bed already mentioned, dismounted and fired their match locks across the front of the column, to the astonishment of not a few. No one was however hit; and skirmishers detached from the 17th, the leading column, for we had no cavalry, and the Irregular Horse were with the baggage, soon drove them up the low hills. At the same time, those who had gone to the rear, perceiving themselves cut off, made also directly up the hills, as fast as their horses could carry them.

The column now halted as usual, having marched one hour and a half, and before moving on again, the men were ordered to see their primings all right. During the halt, two wounded men of the skirmishers, were brought in; and the two parties of the enemy rejoined on the hills, and again began to descend towards the head of the column. We then moved on, and immediately they scampered away, only firing an occasional shot, from the heights, upon the advance.

In the pass, we observed the citadel of Kelat towering up into mid air, presenting a very unexpectedly formidable appearance; and soon after, the advance emerging from between the low hills, at the

exit of the pass, was saluted with a round shot, which fell immediately in front of them, fired from one of the guns, sixty to eighty yards in advance of the fortress. The column halted, and a few shots were fired in return, but finding the range too great, the column was moved up, and off to the left, eighty yards or so, down a sort of dry nulla, on to the skirts of the plain. Here, we piled arms, whilst the advanced guard was sent down to the left and front, to scour the gardens, up nearly to the walls. In the mean time, as the different detachments came up with the baggage, they were ordered to fall in with their companies.

KELAT. In front, and to the proper left, of the north eastern gate, fifty yards, or so, from the northern angle of the fortress, arises, rather abruptly, a low irregular broken hilly ridge; which gradually ascends to the westward, whilst to the north, it expands, circling round, and becoming continuous with the low hilly ridge of the pass. Immediately to the east of this, from north to south, skirting the ridge, and south eastern face of the fortress, stretches an alluvial plain, from two to three miles in breadth. This plain, from where we were halted, is quite level, and for one hundred and fifty yards, or so, to the east of the hilly ridge, clear of gardens; that is, there is a clear level space of a hundred and fifty yards, between the low hilly ridge and the gardens to the eastward, whilst, beyond this line, the valley is thickly strewed with walled orchards, and villages, as far as the high south eastern hills.

Kelat is situated upon the extremity of another high broken ridge, sloping down from the south westward; and consists of a citadel, built upon its north western extremity, where it falls abruptly into a narrow alluvial valley below, and between the low ridge already described; (on this face the citadel rises two hundred and twenty feet above the valley below,) and a walled town or large village, encircling its north eastern and south eastern base, stretching outside the walls to the southward.

There is also a large mud built village, off the northern angle, close under the hilly ridge, forty yards or so from the wall; and forty yards in advance of this, nearer the gate and about thirty from the northern wall tower, were the remains of the south west, and south east walls, of a demolished mud house; the latter having a pretty large door-way in it. This ruin was about half way (sixty yards or so from each) between the lowest crest of the hilly ridge, and the gate of the fortress. There was a low mud wall, also, thirty yards in front of the wall, to the right of the gate, running nearly parallel with it, and a walled garden, a couple of hundredy ards or so, in front, nearer to us, of the eastern wall tower.

From the nulla where we were halted, the peaks of the hilly ridge presented the appearance of three round hills; the two eastern pretty near together, but the right the most retired, towards the fortress. Round this, underneath, by a mosque or large tomb, was the direct road to the gate, but that, was in a great measure concealed from our view, in this direction, by a mud building close in front of the gateway. The third and western hill was much the highest, more detached, and between it and the others, was a narrow gorge or pathway, not seen, till close to the hills. On each of these peaks or round hills, guns were planted, and from them, all the time we were halted, they were continually sending shots. Most of them passed over our heads, one fell very close, and was picked up at the time, to discover the calibre; but it was a small shot, and evidently could not have fitted the gun. They generally fired two or three in rapid succession, and then ceased for a time.

About eleven A. M. or later, orders were issued, to form the three infantry corps into columns of attack; but as our rear guards had not yet come up, each to consist only of four companies; two companies were already in front as skirmishers among the gardens. To each regiment was assigned a hill, the three to be attacked simultaneously. The Queen's to take the right; the 31st the left. The advance sounded, the Queen's Royal moved off, out, clear from the crowd of camels, &c.; and the enemy, as it were, hesitated for a moment to see what the manœuvre was. The 17th followed, diverging to the right; and the 31st still farther; whilst the artillery advanced between.

The enemy now commenced a rapid fire from their guns, from the two eastern hills. Next, our artillery opened and a loud hurrah announced the first shell over the heads of the enemy, on the eastern hill; in fact, those were already dispersed.

On the 2nd, or 17th hill, a shot threw the dust, right over their guns, and they also ceased. From the 31st hill, they now tried to get away their gun, but immediately it went "wheels up", at which there was a loud cheer. They got it up again, however, and hurled it down the hill into the narrow gorge or pathway, where they were forced to leave it, from the close approach of the columns. Not a shot had yet been fired by the infantry. The Queen's and 17th, each crowned their hills and cheered; the former then, made a hurrah for the gate, followed by the latter; whilst the 31st running through the narrow pathway, came through the village close under the hill, where one section in particular, headed by a native officer, having gallantly advanced beyond all cover, to follow the Queen's,

lost some men, whom they afterwards dragged in, in the very face of the enemy on the walls, not forty yards distant :—indeed, throughout, the 31st Bengal N. I. behaved nobly.

Before the Queen's could reach the gate, it was closed, leaving all their guns, and some of their own people, outside. The grenadier company and part of some of the others, now ran back behind the ruined walls of the mud building, formerly described; whilst most of the rest found shelter under the walls of the eastern extremity of the village under the hill. The 17th covered themselves, by lying flat, behind the low crest of the hilly ridge, thirty yards, or so, in rear of the Queen's; whilst the advanced guard, (which from behind the garden in front of the eastern angle of the fortress, had also made a run for the gate, on seeing the Queen's charge from the hill), got under the low mud wall, fifty yards, or so, from the proper right of the gateway.

Immediately after this, the artillery appeared in the narrow pathway between the 31st and 17th hills; but, their horses seemed scarcely able for the task, and trying to get up the sloping west face of the eastern hill, between the Queen's and 17th, they stuck fast altogether. But, immediately, the grenadier company of the 17th, sprang to their feet, and up the hill with them. — Some of the other guns, got on to other heights, more to the westward, and twice sent a round shot through their north western parapets, dislodging those firing upon the 31st. From the south eastern extremity of the ridge, our guns were directed upon the gate, but, most of the shot fell short, in a sort of mud heap, close to the foot of it. One shot, which the artillery men could not get off for sometime, went right over all. The artillery in this position, were cramped by the advanced party of the Queen's in the corner of the old ruin, and one shell actually burst over their heads. At this time, the road, over the heights to the southward, was becoming crowded with fugitives, when Captain Outram suggested a show with the Irregular Horse in that direction: fearing the Khan might also escape. This, the Major General granted, telling him, to take a hundred of the best mounted.

By this time, the casualties in the Queen's, were becoming serious, particularly in that portion, which had taken shelter behind the ruined buildings: — from the towers about the gate, the enemy were picking them down, one after another, through the door way. Lieut. Gravatt was killed here, and another officer wounded. No impression was yet made upon the gate, and the ammunition of the artillery was nearly exhausted. General Willshire then urged, upon Brigadier Stevenson, to send round (by the way they came) two guns

down to the plain below, and nearer to the gate. This was done with great coolness by the Shah's native artillery men, under the direction of an English officer, and with scarcely a casualty: — the enemy intent upon the advance parties of infantry, seemed to disregard every thing else.

At the second or third shot, the left half of the gate fell (partially only,) and immediately there was a general hurrah "the gate is down," and a rush from every quarter towards it; the leading portion of the Queen's Royal, and the advanced guard entering simultaneously, followed by the 17th; whilst part of the latter, and 31st ran round, under the eastern and western walls, to the southward. Many of the enemy escaped, at this time, over the walls, and ran up the valley and hills to the westward.

All, was now detached fighting, up, through the narrow streets to the citadel. The passage leading to that, could not be found for nearly an hour, and then, it was forced from a prisoner.

The citadel rises by a succession of small square mud terraces, narrow dark passages and rooms: the most difficult to be unravelled imaginable. Every one of these, almost, was the scene of a petty action, in one or two with horrid carnage of the enemy. Of the men of the Queen's, at least, also, every wound almost was fatal; missing was out of the question. Again and again too, did they treacherously attack our men, even after quarter had been granted them, and some lives were, lost, and several wounds were received in this way, both in the town and citadel. In all, the Queen's Royal had 69 casualties, including 6 officers; of whom were dead next morning by 8 o,clock, 23.

The total casualties in the force were 138. The killed of the enemy, amounted to about 200, including the Khan, and 7 chiefs. Indeed, all the chiefs except two, who were made prisoners after holding out, in a sort of pigeon-house-looking place over the gate, till near 5 P. M. But the wounded, or the number who afterwards died of their wounds, cannot be estimated.

By 6. P. M. the tents were pitched on the space between the point of the hilly ridge, and the garden to the eastward, 200 yards or so from the gateway, and all the wounded under cover. The following days were occupied in burying the dead, disposing of the prize property, and preparing to continue our march towards the provinces.

Provisions were in the greatest abundance, but the means of carrying them, limited; and in consequence, we had to take only a bare supply to Kotra in Cutch Gundava. On the 21st of November, the

Queen's and 17th (leaving all their sick and wounded, for whom, proper carriage could not be procured, with the 31st and Shah's artillery, who were to remain at Kelat,) resumed their march southward. In three marches, we reached Sohrab, 41 miles, and on the 24th, turned the hills to the eastward, and entered the Gundava pass. One day we halted at Bapow, the seat of the Khan of the pass, and one day near the head of Panewan (that is "water crossing," no village,) reached Kotra on the 6th of December, and pitched close to the ground we left on the 31st of March. Total distance from Kelat to Kotra, 170 miles. Length of the pass, 124 miles.

From Kwettah, the route to Kelat passing directly to the west five miles, to turn the western ridge which bounds the valley of Sowle, lies up a narrow waste looking valley, destitute of water, except just at the halting places. At the head of this, it crosses the valley of Moostong, which is seen stretching away to the eastward, eight or ten miles, plentifully supplied with water, and scattered over with villages, orchards and corn-fields, the two last particularly about Moostong itself, and enters another waste looking narrow valley, where water is tolerably plentiful for a small army, in a sort of nulla (small stream) which flows down it, into the Moostong valley. At Monguhur forty-five miles, this route joins the direct one from Moostong opening into a broad plain, where abundance of water is found in small running streams. Just here this plain is already fertile, and capable of great improvement, but beyond this to within seven miles of Kelat, it is quite sterile, clothed like the rest of these countries, with dry looking camel shrubs. This, I believe, is the highest point of the plains of Beloochistan, and from it, the valleys slope away to the northward, or southward. The last seven miles of this route, lies through amongst low hills, at the extremity of which, there is a sort of pass, opening into the small, but apparently rich valley of Kelat.

This valley, two or three miles in breadth, coming from the north eastward, stretches past the south eastern face of the fortress, and is terminated a little to the southward by a low hilly ridge; or rather, we might say, the river or stream which supplies the valley, here, turns abruptly down a deep gorge to the south eastward.

From Kelat, ascending over these strong heights to the southward, three or four miles, we come upon an immense arid plain from six to eight or ten miles in breadth; sloping away to the southward, and to the eastward; abruptly bounded by high barren mountains. This plain is covered with the common camel shrubs, but except at the resting places, Rodinjo and Soormasing, it is destitute of water as far as

" Sohrab." Here however, it is again found in running streams, or artificial water courses.

Leaving this plain, which is still seen stretching away to the southward, we turned the eastern range of mountains, down into the upper part of the Gundava pass, twelve miles. The Gundava pass, like the Bolan, is merely the bed of a mountain torrent, which arising from amongst the hills to the south eastward of Kelat, descends eastward through three mountain ridges, piled, as it were, one against the other, and opens into Cutch Gundava, between Kotra and Jull. The distance through, is greatly increased, by its zigzag direction, its course closely resembling the letter, " Z."

This pass, though confined, and to infantry tedious from the frequent crossing of the stream, is by no means impracticable for an army, even upward. Water is plentiful every where, and there is a good deal of long grass, tamarisk and other jungle, with, here and there, patches of cultivation, particularly towards the lower parts of it. A few soldiers, of course, could defend it in many places; it is so narrow, and with the rocks or mountains rising perpendicularly some hundreds of feet; but as for the natives, they might soon be out flanked and driven from their position, before the body of the force entered. As far, as the road, and ascent, however, are concerned, it is by no means so practicable a route as the Bolan, exclusive of its greater length.

On this route from Kwettah, supplies might be expected at Moostong, Moonguhar, Kelat and Sohrab; but no where else, in any quantity. Even forage would be scarce, under any circumstances, except for camels.

Kwettah, we have said, is six thousand feet above the level of the sea, Kelat eight thousand, and Cutch Gundava one to two thousand. The temperature of November with us, therefore varied greatly. At Kwettah, Thermometer was 16° or 18°, at sunrise before we left; at Kelat, 14°; and one or two days at the latter, the south eastern mountains were covered with snow. Whereas, in the lower parts of the Gundava pass, and at Kotra, we had altogether an Indian climate. Thermometer's highest diurnal range from 1st to 24th, 65° to 80°; lowest at 6 A. M. 14° to 38°, and highest from 25th to 30th, 76° to 86°; lowest at 6 A. M. 30° to 41°. At Kotra 86° to 96°; and 50° to 60°. — No rain or snow in camp, or even, on the plain.

At Kotra, we remained till the 10th of December, when having detached on, the two guns of the Bombay Horse Artillery, to Sukkur, General Willshire with the Queen's and 17th, marched direct upon

Larkhanu, retracing nearly, our steps of the preceding year. Halted one day at Ketchee, on the borders of the desert, where we were overtaken by the "Kafila" with supplies and sick carriage, sent up from Sukkur. The following evening, 14th, we marched half way across the desert, and pitched, having sent on plenty of water upon camels, and next day reached Bahram, on the opposite or Scinde side. This time, we found the distance across, only twenty eight miles, having kept the direct course, and by making two marches, felt it no more than ordinary marching.

At Bahram, we found water both scant and muddy; moved on the following day, and reached Larkhanu, on the 18th, where we encamped on some dusty ground, close to a large square mud fort; to the west of the village or town.

On the 29th, Head Quarters and 17th, moved back upon Sukkur; and on the 28th, the Queen's Royal marched to Thuggur bunder, on the Indus, twelve miles, through dusty jungles, and pitched half a mile from the river, upon an open space amongst corn fields and cotton grounds, surrounded by thick tamarisk and other jungles.

Throughout December, the weather was quite dry; warm during the day, but some times very cold in the night. Thermometer's highest diurnal range, 70°, to 96°; this includes the last five or six days, in the pass; lowest at 7 A. M. 40° to 60°. Embarked at Thuggur bunder, on the 12th January, in river boats sent down from Bukkur, and reached Tatta bunder, four miles east of that city, on the 21st.

On this interesting, and very picturesque voyage, down the Indus, the fleet breaking off from the bank every morning about 7 o'clock, descended in close body, chiefly by the strength of the current, except at the different turns of the river, where all oars, were at work to keep the boats clear of the bank; along which the stream frequently runs with great force, rapidly undermining it, whilst the parts above, clothed with tamarisk and other jungle and trees, rolls down continually, sometimes with considerable danger to boats.

The banks of the Indus, we have elsewhere said, present every where a clean, light coloured muddy surface; some are newly formed, a year old or so, and quite soft; others two or three perhaps, hard and covered with young tamarisk; whilst others again, judging from the stately trees round the half swept away villages, must have stood for ages. The river, however, acknowledges little distinction:— all are more or less involved in the general wreck; and as one bank falls, another, rises, to share the same fate, at the whim of the stream.

These banks are of various heights, but we were scarcely ever at a loss, for a place to hook on, when required. This we generally did at 4 or 5 P. M., to enable the men to cook on shore, there being no room in the boats; — sometimes we did earlier than this. For when it blows fresh, the labour with the oars, becomes so continuous, that the boatmen, very generally, make for the first low bank.

The average rate of the current at that season, is, I believe, about four miles an hour.

On this voyage, we had good opportunities for observing the manner of raising the water for irrigation, and for comparing the two sides of the river. On the Hydrabad side, I once counted sixteen or eighteen large Persian wheels at work, within the distance of a quarter of a mile.

At Tatta bunder, the carriage for the regiment not having arrived, we encamped upon the dusty bank, close to the river. Marched however, on the 26th and reached Karachee, sixty-four miles, on the 31st; there we pitched upon hard dusty ground, near some low stony hills, a mile or so N. E. of the lines of H. M.'s 40th Regiment. No transport had yet been heard of, for the regiment.

During January, the weather continued dry and tolerably cool, till the 21st at Tatta, when we had very heavy rain for two days, inundating many of the tents, and again on the 27th, on route to Karachee, from 9 P. M. till noon. After that, however, it was dry and warm. On the 6th of February I was moved from medical charge of the Queen's Royal, to that of the 17th, then on its way to Tatta. On my return to Karachee with the 17th, on the 25th of February, I found part of the Queen's still there; the hot wheather fast setting in, and they in the prospect of a two hundred and twenty mile march to Deesa. The last of them, did not leave Karachee till the 5th March; the Regiment reached Deesa on the 4th of April. Total distance marched by the Queen's Royal from the 31st of March 1839, to the 4th of April 1840, being one year and five days, exclusive of river and sea voyages, one thousand six hundred and seventy miles; or from the 26th of December 1838, being one year, three months and five days, two thousand and thirty-nine miles.

*Barracks.* No house or other building, has been occupied during the year, either as a regimental hospital or barrack. The tents were plain made, that is, without windows, or other means of ventilation, except the doors, with single walls and double fly; their dimensions were twelve feet square, and six in height of walls. To each were allowed sixteen or eighteen men, but these were seldom

perhaps, all in at once. The sides were generally kept open during the day, and when for any time stationary, the walls taken down occasionally and the tents cleaned out. The Hospital tents were of the same description, but double poled, and issued nearly in the same proportion; when necessary, however, additional were obtained from the companies. The ground of the hospital, was also frequently changed, shifted backwards and forwards, and particularly at Kelat, when filled with wounded.

On the expedition into Beloochistan in November, the outer flies were all left behind, for want of carriage, and we did not get them again, till about to embark at Thuggur bunder, towards the middle of January. In the boats down the Indus, the tents were made use of as awnings, side walls, &c. to keep out the sun, during the day and the cold damp air in the night.

*Rations and Diet.* From the nature of the service engaged in during the year, the scarcity of carriage, and the thinly peopled countries, or deserts, in which we were campaigning, the men were very generally on under rations, particularly of bread, flour, and rice, during the months of April, May Juné, and July, that is, till we reached Cabool; and again in October, on our return over the mountains to Kwettah, and in November, except the few days at Kelat, till we met the supplies from Shikarpoor, at the foot of the Gundava pass. Fresh vegetables of any kind, were seldom seen the first eight months, except at Cabool, Ghuznee and Khandâr.

When stationary, the meals were at the usual hour, that is, breakfast at 8 or 9 A. M. and dinner at 2 P. M. but when marching, of course, they were extremely irregular, and sometimes from the scarcity of firewood, or its late issue, there were no regular meals. Upon the whole, we may say, during a great part of the year, the diet was neither plentiful nor wholesome. In addition to the badly cleaned flour, of which they had to make their bread; the great proportion of animal food (very good, grass fed, fresh mutton, chiefly), coupled with the want of fresh vegetables, was objectionable, and the effects were beginning to display themselves on our approach to Ghuznee, both in the nature of the bowel-complaints then prevalent, and in dry scurvy; but, which an abundant supply of fruit, and a very good vegetable (beet-root) obtained there, happily put a stop to. Nevertheless, the rations were the best, the country itself could afford, and the rate of pay would admit.

No spirits were issued on a hundred and seven days, and one dram, only, a great part of the rest of the year. The longest periods

without altogether, were from the 8th, of July till the 10th, of September, and from the 24th, of October to the 2nd, December. From this period, the 2nd, December, the men had full rations; viz. fresh meat 1½ lb. rice 8 oz ; bread biscuit 12 oz : spirits 2 drams. No salt provisions except perhaps a few days at Karachee.

*Duty and Employment.* The whole of this year, having been spent in the field, under a variety of climates and other contingencies it would be difficult, to award to any one set of causes, its due share in the deterioration of the health of the regiment. But that the duties and employments, to wit, night marching with the loss of sleep; or sometimes night and day marching, with scarcely a halt for weeks; rear, baggage and camel-grazing guards, did very materially contribute thereto, in the hot weather at least, there cannot be a doubt: particularly with regard to the diseases of the brain, stomach and bowels. It is curious, perhaps, that we suffered so little from the former, when we take into account, the nature of the duties, and the high range of the thermometer. We may remark, however, that on the camel-grazing guards, the men were in white jackets, and forage caps.

*Internal Economy.* The facilities for obtaining spirits, were so limited, during the greater part of the campaign, that it will scarcely be necessary to say any thing on this head. There have, however, been fifteen convictions under drunkenness; the greater number, of course, during the last three months, and three men have suffered corporeal punishment; two of these for disgraceful conduct, and one for insubordination. The total convictions during the year amount to 30, of which have been sentenced to imprisonment 21, and to forfeiture of pay 14. All these last, have been for drunkenness.

*Average Strength.* The average strength of the regiment with head quarters, including a detachment of 50 sick and weakly men kept at Bukkur in March 1839, and of a similar detachment of the same strength, left at Kwettah in the beginning of November, has been for the year ending 31st March 1840, 518. The greatest strength (detachments included) has been 569, and the least, 433.

The total number of admissions, *of those men who were in Scinde and Affghanistan*, amount to 1,336, for the year, and the deaths to 82, exclusive of 22, who died out of Hospital. Of these 22, 18 were killed in action, 3 were murdered by robbers, and one died suddenly of pulmonary apoplexy. Of the 82 under hospital treatment, 13

died of their wounds at Kelat, and 1 at Ghuznee, within the first eighteen hours, and afterwards 5 of the Kelat wounded, 2 of the Ghuznee; the rest under this head (wounds and injuries) died of other diseases unconnected with their wounds. One of cholera, I believe, on route to Shikarpoor with the detachment of sick and wounded men, in November; and of whose deaths, no regular return was ever received. From the scarcity of Medical Officers, these men passed through the hands of two or three, on that short march.

Of fever, 10 died of the "Pleuro-pneumonic," in Cutch Gundava, and Scinde, in December and January; and 4 of the Remitting complicated with dysentery and liver, in April and May, on the march to and at Khandár, one of them left behind at Kwettah. Of bowel complaints (diarrhœa and dysentery) 2 died at Khandár in May and June; 2 in July, on march to, and at the Ghuznee; 1, at Cabool; 3 on our return, crossing the mountains to Kwettah; 1, at Kelat, whom we left behind for want of carriage; 1 on the Indus; and 1 on route to Deesa; making in all, with head quarters 11. Besides these, 1 died at Khandár, of phrenitis; 1 of cardiac disease; at Ghuznee, 1 of liver; and 1 of lumbar abcess; 1 of pneumonia near Kwettah; 1 at Kelat; and 1 in the pass; and 1 of some other disease, on route to Deesa; making in all, deaths with head quarters under hospital treatment, 46. Of these were wounds, 14; disease, 34. Died away from head quarters; cholera, 20 or upwards?" coup-de soleil, 8; bowel complaints with detachment from Kwettah, 3. The other 3 having only private notes by me, I do not know, all, however, must have died away from head quarters.

The principal Diseases, by which this sickness and mortality have been occasioned, are these. With head quarters, affections of the stomach and bowels and an epidemic pleuro-pneumonic fever. With detachments away from head quarters, but in Scinde or Affghanistan, cholera and coup-de soleil. At Kotra, in Cutch Gundava, in the end of March, the diarrhœa from which we had been suffering in Scinde, became very rare, but it again, increased on the march to Dadur, in the beginning of April, and particularly afterwards from Dadur to Khandár.

Immediately, after we left Kotra, also, a low fever chiefly of the remitting type, but occasionally also of the intermitting, began to be prevalent, becoming more severe and frequent during the halt at Dadur. In the pass, this fever became complicated, in many instances, with the bowel complaint; the latter in these, taking on ultimately a dysenteric character, and also, sometimes with hepatic abscess. One

of these last proved fatal at Kwettah, amongst those men, whom we left behind for want of sick carriage. One fever case, also complicated with dysentery, proved fatal in the Bolan, and another at the foot of the Kojeh pass, but in neither of these, from the nature of the service, could a post mortem examination be made.

The worst fevers, we suppose, were contracted in the Bolan and Kojeh passes. Abundant sources of malaria, are to be found in both; and in addition, at that time, the air was quite contaminated with the effluvia from putrifying animals — men, camels, and horses: indeed, the stench was often quite sickening.

Very possibly, the diarrhœa may have been increased by similiar causes. The diarrhœa usually commenced in the night, with frequent watery purging, without tenesmus or appreciable pyrexia. In some, however, it was accompanied with frothiness and whiteness of the tongue, and some heat of skin; occasionally, with nausea or even vomiting, but these were remarked more especially, as we approached Khandár. In a few, here also, there was tenesmus with scanty evacuations, occasionally, but very seldom, mixed with blood. Towards convalescence the motions were often dark coloured and acrid, but this last character, occasionally, also accompanied the other stages of the disease.

Speaking generally, we would say, the disease was ushered in by a feeling of fulness or distension, with griping, followed in most instances by sudden uncontroulable calls to stool; in some however preceded for a day or two, by unusually light coloured motions, tending to laxness. During the next stage, as consistence became restored, the motions were again light coloured; or as they expressed it, loose and like that of a child; then dark coloured, and bilious; but convalescence often took place, without this appearance.

The gripings and purgings were always, greatly aggravated in the cold of the morning. Indeed, in addition to the numerous admissions with this disease during the month, it was no unusual thing, between Kwettah and Khandár, to see a fourth, or even a third, fall out to the rear, during the first halt. Many suffered very much who did not come to hospital; or if they did, not for many days after.

The fever was often preceded by the diarrhœa for some days, and indeed, I think, in all the bad cases. This fever when so complicated, was of a well marked remitting type, and towards the latter stages, the face assumed very much the appearence of the native, in sickness. The tongue in the bad cases, was smooth or polished, and of a pale brown colour in the centre, but moist and frothy at the edges. Those who recovered, had a scabby eruption about the lips: indeed

this and the peculiar hue of the countenance, were very characteristic. This appearance of the tongue, was sometimes observed in those, who never had the diarrhœa. In all the fatal cases, the purgings continued to the end; nevertheless, they seemed rather to sink from the fever. In the last case, death was preceded by delirium, and a mucous rale with a degree of snoring, in the left chest anteriorly. Both died on the 9th, day, in hospital, as did also the next, some days after: this last, as we were now halted at Khandár, I had an opportunity of examining. The mucous membrane of the bowels was of a continuous dark red colour throughout, with here and there specks of incipient ulceration, the size of pin heads, pretty regularly scattered over a portion near the caput cœcum. The liver was of a very pale colour.*

*Treatment.* With regard to this; in the diarrhœa we found full doses of calomel and opium (20 grs. of the former and 2 of the latter) for the first few days, followed by epsom salts, answer very well (castor oil from its bulk, &c. we had not); then, hyd. c. creta and dover's powder, with an occasional dose of magnesia and rhuburb.

When tenesmus was present, we always commenced with a moderate bleeding, and from its effects, were induced to have recourse to it latterly, even where there was no tenesmus, and particularly, as our medicine chest began to get low.† The fever was treated upon similar principles, only instead of the hyd. c. creta, and dover's powder, after the first two days or so, calomel and opium and saline mixture during the paroxysms. In the remissions, quinine even from the earliest period, not waiting for a perfect remission, and this seemingly with the best effects. Sometimes in the very bad cases, we mixed the quinine with the hyd. c. creta, or gave quinine and opium. This plan of beginning as early as possible with the quinine, in remitting fever, I have been led into, gradually, for some years back.

*Causes.* With regard to the causes of the diarrhœa, a great variety of opinions were entertained; but, these, we consider, were

* Towards the end of the campaign when these Khandár bowel complaints terminated fatally by chronic dysentery, there was often little ulceration, but only a granular state of the lining membrane, like what occurs in chronic ophthalmia.

† From the scarcity of carriage, we had, in the first intance, on leaving Larkhanu, to take a limited supply, and particularly of bulky articles; and in addition to our losses on the march, we supplied three companies of a Bengal Native Regiment left at Dadur without any, and the Irregular Horse. The great run, also, upon our calomel, from the prevalence of one class of disease, tended to the same result.

the essential, the great diurnal variations of temperature with a high range of the thermometer, acting upon bodies, possessing a peculiar predisposition, and these were rendered more efficient, by such causes as diminish the constitutional powers of resistance, to wit, fatigue from loss of sleep, continued marching and night duties, as out-lying picquets, &c. &c.

The heat of the day, keeping up a very free exhalation from the skin, we shall call the predisposing, and associate with it, fatigue and loss of sleep; the exciting, the cold chill of the morning, and with it, associate night duties. The cause will therefore resolve itself, into checked perspiration, in bodies possessing a peculiar predispostion; this predisposition, the effect of previous residence, in a tropical climate.

The fever first showed itself at Kotra, near the entrance of the Gundava pass, but from that period, continued to prevail more or less, though by no means in a severe form, with the exception of the few cases, which we suppose were contracted in the Bolan, and Kojeh passes. The first fatal case might be considered an exception, for though he died, the fourth day, in the Bolan, he was admitted at Dadur. Still we are not sure of that, for none, before the passes, presented similar symptoms.

Its cause was no doubt malaria, abundant sources of which existed in both, the Bolan, and Kojeh; also at Kotra and Dadur for the milder fevers, and agues, in the numerous water courses, which intersected the encampment. At Dadur, there was, also, a sort of marshy place, immediately to the right of our camp, and at Dadur were comparatively the greatest number of admissions. Total admitted in April, Febris Remittens, 57; Diarrhœa, 150; all other diseases, 31. Total died in April, Febris Remittens, complicat, with head quarters, 2; at Kwettah 1.

At Khandár, in May, fevers of the intermitting and remitting types continued to prevail, particularly the former, and sub-acute gastro-enteritis or diarrhœa, but the last was by no means to the extent it did on the march. Two complicated fever cases proved fatal in the beginning of the month; the one has already been alluded to, the other was nineteen days in hospital, and in consequence the dysentery was more marked, but he had also abscess of the liver: the colon was extensively ulcerated. This man appears in the return to have died under dysentery, but his disease was originally of the same character as the others. Two cases also were followed, the one by anasarca, and the other by chronic visceral disease. All these were contracted previously to Khandár.

The majority of the Khandár admissions, were regular agues, chiefly of the tertian and quotidian types:—quotidian, that is fevers with daily paroxysms; they may have been double tertians, but there was in no instance doubling on the same day. The remittents also very generally terminated in intermittents. The diarrhœa as before, was preceded by dyspeptic symptoms; pain at the stomach, nausea, occasionally vomiting, fulness and distension after eating, and griping; in a few instances, these dyspeptic symptoms with costiveness, constituted the whole ailment. The evacuations on admission were generally white and frothy, like serum and mucus, with tenesmus often, or uneasy feeling of constant needing; at other times feculent and white, or of a very pale colour; sometimes towards convalescence, of a bright yellow.

The total number of admissions, for the month, were, Diarrhœa 70; Dysentery, 14; Febris Intermittens, 21; Remittens, 14; all other diseases, 21. Died, Febris remittens complicat. 2.

In June, the fevers became less frequent, and particularly the agues, but the gastro-enteritis continued. Dysentery however was more marked, and latterly gastro-duodenal symptoms with jaundice; in consequence, venesection and leeching were more freely had recourse to; and cupping over the epigastrium. In this month also, we had a few cases of cerebritis, one of which proved fatal by convulsions, and another ultimately terminated in mania. One man died also this month of dysentery; he was an old cachectic subject, in hospital with ulcerated sore throat, when attacked with dysentery. He was only brought on the campaign, because he belonged to the band, and had no military duty to do.

We had also a few cases of catarrhal opthalmia, and five or six of ecthyma luridum. Also one of disease of the heart; see cases. "Smith." Total admissions during the month (June), Phrenitis, 2; Diarrhœa, 70; Dysentery, 5; Enteritis (Gastro-duodenitis with jaundice) 4; all other diseases, 27. Died Phrenitis (Cerebritis,) 1; Dysentery, 1; Cardiac disease, 1.

In July, on the march to Ghuznee, the prevailing diseases were again of the gastro-enteric character, diarrhœa, dysentery and jaundice; the latter particularly in the beginning of the month, preceded by dyspeptic symptoms, and some degree of febrile excitement. Latterly also two cases of purpura (dry scurvy), and one or two near approaches to it; but this was soon put a stop to, by the beet-root, and fruit so plentiful at Ghuznee. Half a pound of grapes was allowed also in hospital as an extra, even in the bowel affections, where the least scorbutic tendency was displayed. Two died this month of

disease, both of dysentery, but both were admitted, the preceding month, at Khandár. Indeed, most of the admissions, dated their ailments to Khandár, or previously to that. After Ghuznee, bowel complaints were rare, and jaundice totally disappeared.

In the end of June, and beginning of July, we had also several cases of ulcer, consequent upon ecthyma, both amongst the officers and men, but these also by the end of the month, were all well. One man, in hospital all this month, admitted from imprisonment at Khandár, according to his statement, had been labouring more or less under the diarrhœa, ever since his arrival in Scinde, latterly accompanied with bleeding piles. He was taken in, with strong symptoms of reaction, simulating peritonitis, and other acute abdominal inflammations; but which, his vibrating pulse and pale exsanguious aspect sufficiently contradicted. Whilst the diarrhœa was restrained, and the acute tenderness relieved, by opium, with calomel and blue pill (calomel we had very little of, but blue pill we made from quick silver in the bazars), or injections of laudanum, &c. occasional cupping and fomentations; he was put upon a steady course of quinine and opium, with wine or spirits, as extras: (these articles we never were without in hospital). This man, Private Patrick Reagan, had not sufficiently recovered to accompany the regiment into Beloochistan in November, but whilst still under treatment, he volunteered, out of hospital, and was most active in the assault upon Ghuznee. Indeed, although we had upwards of seventy, chiefly bowel complaints, on our arrival before that fortress, only eighteen were in hospital on the morning of the assault.

Some of them died afterwards of chronic visceral disease, though we should say by no means in consequence: — possibly it did many of them good; the weather was fine, and they had no knapsacks to carry. One, however, who received two musket shots through his right thigh, one of them with fracture; on account of which, amputation was performed, possibly, did sink from previous debility.

Total admissions with Head Quarters in July, under gastro-enteric disease; Diarrhœa, 112; Dysentery, 9; Jaundice 8; Total deaths during the month, Dysentery, 2; killed in action, 3; died of wounds, 2; murdered, 2; total 9. No fever, to speak of, this month. One fell down hemiplegiac from "coup de soleil" below Kelat i Ghilgee, just as he came upon the ground, after a long march. A mussack of cold water was poured over his head, and sixteen ounces of blood were taken from his arm &c. he was quite well before we reached Ghuznee.

At the storming of Ghuznee on the 23rd, 2 men were killed in ac-

tion, and 28 were admitted into hospital, with wounds and contusions, exclusive of six officers. Of these, 17 were by musket or matchlock, and arrows, and 6 by sabre. The rest were contusions, or fractures by falling stones and timber in the gateway. Two died, one immediately after, from a very deep sabre or rather large Affghan knife cut across the face, with several other, about the extremities, one of which had nearly severed the arm. The other was the case of amputation already alluded to. A third died in the beginning of August, after we left: this was a shot in the Kelat style, a regular aim from behind a mud wall, a few paces distant, after the place was in our possession. The ball penetrated his breast-plate, and might have been supposed to have gone directly into the chest, had not an ecchymosis and crackling round the parietes to the scapula, led us to its site, where it was easily cut out. This man did well for several days, but died of an acute attack of that side of the chest; most probably a pleurisy from part of the breast-plate or other matters, having found their way into the cavity, as the sloughs separated.

An old, and for some years weakly soldier, who got into a room amongst a host of the enemy, who closed the door immediately upon him, was regularly chopped up. He said, seven or eight were cutting at him on the floor, when his comrades burst open the door, and rescued him. He had several deep cuts over the right parietal and temporal bones, cutting the scalp into pieces; several over the right shoulder nearly laying open the joint; and one across the right arm dividing the humerus, besides several other minor cuts about the extremities, yet, he recovered, under the care of Staff Sugeon Pinhey, H. C. service, in the fixed hospital at Ghuznee, without one bad symptom, or even febrile movement. Several slices came away from the mastoid process of the temporal bone before we left. The arm, however, from the extensive cuts about the shoulder, is nearly powerless.

A young soldier received a small matchlock shot in the left knee. The ball penetrated the centre of the patella, but its further course could not be traced without adding much to the danger. On consultation with Superintending Surgeon Kennedy, and other medical officers present, it was agreed, to try and save the limb. No great inflammation followed, but the leg is still little better than a burden: it may however yet improve. The ball would seem to be lodged, about the inner side of the head of the tibia.

Another man received a small matchlock shot on the left shoulder. He was carried, in the first instance, by mistake, to the Bengal field hospital. On his arrival at the regimental, the following day, one opening only presented itself at the point of the

shoulder, the ball having passedt seemingly directly inwards, under the acromion. The man himself affirmed it was in his chest, yet he recovered with only a stiff joint, inability to raise the arm from the side; he could swing it backwards and forwards well enough. He died of some other disease on route to Deesa, when the ball was found, by Dr. Jopp, imbedded in the long head of the biceps.

There were two or three other severe wounds at Ghuznee, but of less interest, and therefore, we shall not enlarge upon them here.

From the time we left Ghuznee, till we returned in the end of September, a period of two months, the only diseases of moment, in addition to readmissions with bowel complaint, were a few cases of ague at Cabool, in both encampments, chiefly at the new and full moon, and a few of mild acute dysentery, in the cold damp weather; also, in September, a few of acute rheumatism.

Admitted with Head Quarters, in August, Diarrhœa, 36; Dysenteria chronic, (changed diseases from Diarrhoea) 3; Dysenteria, 3; Febris Intermittens, 7.

Died; Dysenteria chronic. 1. Also at Ghuznee, of the sick and wounded left there, wounds 1; lumbar abscess, 1; and 1 of Dysentery, brought on to the return of this month, having died on the 31st, of the preceding, after we left.

In September, admitted Febris Intermittens, 20; Remittens, 4; Dysentery (fresh cases), 3; Diarrhœa, 15; Rheumatism, 7; Cholera 1; Catarrh, 3. Died, none in hospital with Head Quarters, but one fell down dead of pulmonary apoplexy on the 29th, seemingly, from the extreme cold; he had just been relieved off sentry. A large apoplectic engorgement was found in the upper and posterior portion of the left lower lobe, and the cavity of that side was also filled with blood; the pleura having given way at the same part. A few solitary tubercles were scattered throughout the lungs.*

The cholera case occured on the 18th, the first march from Cabool; but other corps had one or two, the previous day. One man also died at Ghuznee of liver, on the 22nd, of those, we left on the advance of the army upon Cabool.

Crossing the mountains to Kwettah in October, the chief admissions were agues and rheumatism, the former particularly during the eight days. Several were also admitted with sore feet, the boots or shoes of many of them, now scarcely hanging together. Never was the regiment more healthy, and every one seemed to acquire new

* Connected with the diseases of this part, we may mention the frequency of opthalmia amongst the Natives of Cabool, and its vicinity, as evinced by the numerous chronic cases, with total or partial blindness, seen there.

vigour, except those with chronic bowel complaint: they on the contrary, fell away rapidly. Only one case of pneumonia, I met with crossing the mountains, and that was in a Native (Portuguese) writer, he recovered. But one occurred in the regiment on the 26th, the day we descended into the valley of the Lorah, and proved fatal on the 31st. Admitted, Febris Intermittens, 21; Rheumatism, 4; Diarrhœa, 20; Pneumonia, 1; Died, Dysenteria chronic. 3; Pneumonia, 1.

From Kwettah till we entered the Gundava pass, the only admissions with disease of moment were two of pneumonia, one of chronic dysentery, and a few of mild intermitting fever. The first three all proved fatal, one of pneumonia on the 13th, one on the 27th and the chronic dysentery at Kelat, sometime after we left. We had only four in hospital on the morning of the 13th. The wounds that day, however, were both numerous and severe; and the want of medical officers was much felt: there was not one for each corps, and no Medical Staff.*

The Queen's Royal had 47 wounded, admitted into hospital, exclusive of 5 officers, and those who died on the field before the tents were pitched: 39 of these were by gun shot, and 8 by sabre cuts. Only one of these last proved fatal. This man lived three days, although an immense wedge was cut out of the occiput including part of the brain. It was a horrid looking wound, and what rendered it still more so, the man stood up and answered questions, rationally, betraying only a little wildness of countenance. He soon became comatose, however, and remained so till he died.

The gun shot, were of the most severe description, as is evident from the proportion of killed to wounded, and the proportion would have been still greater, but for the small size of the matchlock balls, scarcely larger than that of a small pistol. It was not fighting at a distance, and at random, but steady aims from a rest; and in the town and citadel, out at a door, or window, round a corner, or over a wall, a few paces distant. 6 were of the head; and of these, 5 were dead within a few hours. Two when raising their heads quietly over a wall to shoot, a very correct marksman, were themselves shot right through the skull, the moment their foreheads appeared above the parapet. In the one of the head cases, who escaped, the ball entered the left cheek, and came out under the ear.

18 were of the chest, exclusive of one Officer. Of these 10 died by the next morning, and one a few days after of pneumo-

* The Queen's and 17th had each lost a Medical Officer in the campaign And on this expedition I had Medical charge also of the detachments of the Bombay Horse Artillery.

nia of the wounded side. One was over the neck just over the sternum, passing obliquely across the large vessels, from about two inches; this was one of the first wounded on the face of the hill; the ball, a sort of large slug about an inch long, and possibly fired from a wall piece, was cut out immediately, but a day or two after considerable hœmorrhage occurred from the knife wound in the night. It seemed to be from a very small vessel, and was stopped easily by styptics and pressure, but it broke out again, two mornings after, to a more alarming extent; the man was faint, and the vessel could not be seen; we therefore sewed the lips of the cut together, by the uninterrupted suture, which perfectly restrained it. 9 exclusive of one Officer, were of the abdomen or pelvis; of these six were dead by next morning. Most of them died in great agony.

10 and one Officer were of the thigh; one of these only proved fatal. The ball entered in front, just above the knee, and passed out at the ham. Next day, there was considerable heat and swelling about the knee, but the foot and leg were quite cold. He became completely jaundiced, but no signs of mortification of the foot or toes had appeared when we left him on the morning of the 21st. He died on the 28th, but in what way we never heard.

The other 11, besides one Officer, were of the arms, legs, or hands. (one officer and several of the men, had flesh wounds of the extremities, in addition to their other wounds, these we have not reckoned); one was a severe contusion from a large stone thrown down upon him from the citadel. Of these, proved fatal, one; it was a large jinjall shot smashing both the bones of the leg, and rendering it a vast ecchymosed mass. The man was very low with a weak pulse, and sank without any effort at reaction: there was no hœmorrhage. Many of the other wounds perhaps, present points of interest, particularly those of the chest, but with them, we shall not further lengthen this already unwieldy report.

As the diseases of the Gundava pass were intimately connected with a very fatal epidemic, which followed us throughout the rest of the campaign, we shall pass on, leaving them to the next section.

Of the principal classes of disease, were admitted in November, Pneumonia, 2; Febris Intermittens, 10; Dysenteria Chronica, 7; Diarrhœa, 9. Died with Head Quarters; Pneumonia, 2; Wounds in hospital, 9; killed in action, 15.

In December admitted, Febris Remittens, 23; Intermittens, 7; Dysentery, 3; Diarrhœa, 3. Died with Head Quarters; Febris Remittens, 8; of these one appears in the return under Enteritis (Peritonitis) and one under Pneumonia.

In January, admitted, Febris Remittens, 14; Intermittens, 7; Diarrhœa, 10; Popliteal-aneurism, 1; all other diseases, 16. Died, Febris Remittens, 2; Dysenteria Chronica, 1. Of the men left at Kelat; from the 21st of November till they rejoined us at Thuggur bunder, died, wounds 2; Dysentery, 1. Of the men left at Kwettah on the 3rd of November to go down the Bolan, till they rejoined us at Larkhanu, 19. 16 of these at least of cholera, but in the return they appear under the diseases for which they were detached, viz., Dysenteria Chronica, 5; Diarrhœa, 6; Rheumatism, 2; Febris Intermittens, 2; Dyspepsia, 4; Catarrh, 1; Paralysis, 1; Vulnus Sclopitorum, 1.

*Epidemics.* In this section, we shall only notice the Pleuro-pneumonic-fever, which commenced in the Gundava pass, and followed us throughout the rest of the campaign, engrossing every other. We do not consider it, however, as a distinct epidemic fever, the complication only rendering it so; for all fevers, with one or perhaps two exceptions, whether intermitting or remitting, from the period of our arrival at Kotra, till we embarked at Karachee, were more or less complicated with the pulmonary affection.

The pulmonary tendency first evinced itself at Ghuznee, in the case of apoplexy already noticed from the extreme cold of the morning; in lungs predisposed by the irritation of solitary tubercles scattered through their substance. Secondly, in the case of pneumonia, the day we left the mountains, between Ghuznee and Kwettah, and afterwards in the two between Kwettah and the Pass.

Occasionally also we had mild intermitting and remitting fevers all the way from Cabool. On the 27th of November, four days after we entered the Gundava pass, one man was admitted with ague, and discharged well on the 6th of the following month, without betraying any pectoral ailment. On the 28th, a second fever case was admitted, just as we were leaving the ground. That night our camp was very confined, part of the force on one side of the stream, and part on the other; and this man had been on guard, and possibly got his feet wet both in crossing and recrossing (as far as I recollect, he had waded across, for the stream was rather deep.) By the time we got to the encampment, about the middle of the day, acute peritonitis had supervened, and in consequence, notwithstanding, both the fever and pain shewed marked remissions, we looked upon the local affection as the chief disease, and therefore entered it "enteritis" (peritonitis) in the books, or at least soon changed it to that. — It proved fatal on the first of December, when the abdominal cavity was found,

filled with semi-purulent matter, and flocculent false membranes; insomuch, that I suspected it must have arisen from perforation of the bowel. Stating this my opinion, the same day, in a letter addressed to the Deputy Inspector General, though on the most minute examination which circumstances would permit, I had not been able to prove it.

On the 30th, a third fever case was admitted, at first without any pectoral symptoms, but followed two days after by quick breathing, unequal respiration, and slight cough; afterwards by crepitating rales, bronchial respiration, &c. It proved fatal on the 6th. This man was admitted under fever, but from the symptoms and physical signs latterly, together with the pleuro-pneumonic appearances on dissection, I changed it to Pneumonia; thinking I had overlooked the pulmonary signs in the first instance: for at that period, a great part of the day being spent in marching, there was little time for minute investigation. From the frequency we had to cross the stream, it was after 12 or 1 o'clock before the regiment got up to its ground, and then the tents were to be pitched, &c. I did not apply the stethoscope the first day till led to it by the quick breathing, and then, as above stated, the only thing remarkable was the difference of the respiratory murmur on one side, compared to that of the other; the cough he only admitted on being questioned relative thereto. On the 2nd of December, 5 were admitted with ague, and on the 4th, 1. All these recovered without any marked pectoral ailment: indeed, any that would have been noticed, but for the signs which were now developing themselves in the other case. They were chiefly pain about the clavicle; slight inequality of respiratory murmur, and cough, supposed to be catarrhal only.

On the 6th, two were admitted with Dysentery; on the 10th, one of these was seized with the fever, and died on the 17th; the other was seized on the 14th but recovered. On the 6th also, 3 were admitted with the fever, two of which proved fatal; the one on the 10th, the other on the 12th. On the 8th, one was admitted with scarcely any pectoral symptom, but complained of violent headache. He was discharged well on the 18th. On the 10th, one which proved fatal on the 14th. On the 12th, one which proved fatal on the 13th. This case was accompanied with cold skin, and almost imperceptible pulse, and proved fatal without any effort at reaction. On the 14th, on the border of the desert, six were admitted, but the disease was now evidently changing. On the 15th, 3; and on the 18th, 2. One on the 19th, and one on the 20th. From the 14th, the fever partook more of an intermitting character, till the 21st when it became clear-

ly so. From this period, we may consider the disease to have ceased as an epidemic, though it continued as an endemic to the end of the campaign, insomuch at least that every fever had this complication.

It is here worthy of remark, that the preceding year, from the time we landed in Scinde on the 30th of November, till we entered the Bolan pass, a period of four months and a half, at the same season of the year, though we had fevers both of the remitting and intermitting types, we had no pectoral complication whatever, nor had we a fatal case of fever, or indeed of any disease, with head quarters, except one of cholera, the day before we reached Tatta.

Connected with the history also, perhaps, the following is worthy of note. A few days after I joined the 17th Regiment, on route to Karachee in February, a patient, in hospital with this disease, died about noon. Immediately on seeing which, another in the same tent, a convalescent from bowel complaint, and I think, to have returned to his duty that evening, was seized with an agony ; — cold skin, almost imperceptible pulse, and writhing and tossing of the body, insomuch, that he was supposed to have fits. It was with difficulty I could apply the stethoscope, when I found the low, almost lost, respiratory murmur of the right side, and the full semi-puerile of the left. Taking into consideration the two former cases, already alluded to, I put down on a slate, to Dr. Thomson, junior, who saw him with me, and who had also recently joined the regiment; "Diagnosis," Pleuro-pneumonic fever; Pleurisy, right side, recent" "Prognosis; death before midnight." We exhibited stimulants and antispasmodics; applied a mustard poultice, or blister to the neck, &c., but he died soon after 6 P. M.; exhibiting, on the post mortem examination, only a couple of ounces of serum in the right pleural cavity, and two or three stringy adhesions towards the hepatic surface, of perhaps older standing. From a pain or tenderness in right side, evinced some days previously, supposed to have been hepatic, it is possible, these adhesions were then forming. The liver, and every other organ, was perfectly healthy.

A case something similar to this occurred in the Queen's Royal. On the 14th of December, a patient with dysentery, for want of room, was placed in the same tent with others with the fever. He also was a convalescent, but at the evening visit, stated to me, that he felt very ill. Thinking it was from dread, and fearing that to apply the stethoscope, would alarm him still more, I tried to persuade him out of it, and ordered him a dose of calomel and antimonial powper; (as far as I recollect, he had a little fever). Next day he

made a similar statement, and on applying the stethoscope, the crepitating rales were audible over the left chest anteriorly. I had him therefore removed to another tent, where the wounded were, and quinine exhibited for a few days, alternately with a solution of tartar emetic. He was long in hospital before the rales altogether ceased, but he ultimately recovered, and went with the regiment to Deesa.

Two or three others, when the disease was at its acme, evinced great alarm on admission, declaring it was of no use, they must die, and got their wills immediately made out; and I believe, too, all these actually did die.

*Symptoms.* Here, we shall exclude all those, which occurred previous to the 6th of December, the day the disease may be said to have assumed its characteristic marks. From this period, the disease very generally set in, with shivering and other acute febrile symptoms, together with pain and tenderness of one side of the chest, cough and scanty, generally, purely sanguineous expectoration; particularly from the 6th to the 14th of December, when the disease was at its acme. Sometimes, the expectoration was frothy, and sometimes, there was none at all; no cough and no tenderness; only, once did I observe the expectoration tenacious and rusty, but it lost this character again in a day or two, and assumed that of bronchitis. It proved fatal on the 8th day of the disease; purulent imfiltration was commencing in the right lung: — this was the only one, where the pneumonia had advanced farther than hepatization.

The pain in the side and fever were generally reported to have commenced simultaneously, but cough when present, was never mentioned till asked for. In several of the latter cases, the fever and pain had come on, at some period of the day, and gone off again, so as to permit the individual to continue with the column, one, two, or even three, marches. They stated, that the fever had gone off entirely, but not altogether so, the pain; yet, that they had in the intervals, felt well in health, and their appetite as usual. In hospital also, the disease from the first had a remitting character, and particularly so after the 12th, till latterly it became clearly intermitting, that is, the fever, for the pain only remitted.

The tongue was clean throughout, generally, and particularly in the last cases; in one or two the lips swelled very much, and became covered with vesicles; thirst was much complained of in the exacerbations; the bowels were regular or relaxed, and the pulse quick and small, or of moderate force. The tolerance of venesection scarcely exceeded that of health: some indeed, became faint on the

loss of a few ounces of blood in the erect posture; others stood 16 to 24 ounces; and one or two, even, 30 ounces, or nearly that, before evincing any tendency to deliquium. In no instance was the blood cupped, and in most, it was scarcely separated from the vessel; sometimes a buffy film was observed after the 2nd or 3rd day, but generally it presented a bright red appearance.

*Physical signs.* On admission, by the stethoscope, the respiratory murmur on one side, and in at least two cases of three, it was the right side, was found sharp and, distressed, or low compared to that of the opposite, which was soft and more or less full; no rales were audible, or marked bronchial or puerile respiration for a day or two: often not at all. Crepitating rales, or bronchial respiration, were the harbingers of death during the acme of the disease. Not one recovered, amongst the first cases, though two or three did afterwards, when the fever had become intermitting. Percussion could seldom be employed, owing to the acute tenderness of the side.

*Appearances on dissection.* These presented generally more of a pleuritic than pneumonic character, in adhesions, false membranes and semi-purulent effusions or empyemata, with only very partial hepatizations of a portion of the lungs, towards the pleuritic surface. Sometimes, however, the pneumonic predominated: a lobe (generally a lower) or the whole of one lobe, and part of another, were found congested, or hepatized. In two, attended with cold skin, weak or imperceptible pulse from the beginning, and which proved fatal in from 20 to 30 hours, the whole of the lungs on one side, were a mere congested mass. Only, in one, did we find the disease advanced to purulent infiltration; but semi-purulent, or purulent empyema was very frequent. Two or three, however, from circumstances connected with continued marching, or sailing down the Indus, and scarcity of sick carriage, we were not able to examine.

*Treatment.* This, I must confess, was at first wavering, not knowing exactly what to think of the disease; and the continued marching prevented me being able to satisfy myself. In the Pass, I certainly treated them as remitting and intermitting fevers, with the exception perhaps of the peritonitis case, which was sometimes treated as a remitting fever, sometimes as an idiopathic peritonitis.

On the 6th of December, however, at Kotra, from the morbid appearances of the fatal case, and the marked pectoral symptoms (pain in the side and sanguineous expectoration) in those admitted that day,

I was induced to adopt another line of practice, and to treat them as idiopathic pleuro-pneumonia. That is, by free venesection, re-opening the vein immediately, where a tendency to syncope had been too early evinced, and repeating the operation according to circumstances; full doses of purgatives, followed by tartar emetic (2 grs. every two hours); calomel and antimony at bed time; tartar emetic ointment to the chest, &c. With what success the history will demonstrate, but these were the very worst cases, when the disease was at its acme.

It perhaps is curious, almost all these occurred in the grenadier company; (as far I recollect, the first 5 or 6 fatal did): — and it is farther remarkable, that the 17th Regiment marching with us, had few in comparison. Their total admissions with fever of all kinds, and pneumonia, during this month, December, only, amounted to 13; whereas, in the Queen's Royal, they amounted to 30. In making this comparison, it is necessary to conjoin fever and pneumonia, for in one regiment the greater number were admitted under pneumonia, and in the other under fever.

On the 13th, when halted at Ketchee on the borders of the desert, when the admissions were numerous, and the disease again becoming more markedly, remitting, together with the stethoscopic observations, we were then enabled to make on a large scale, we clearly perceived that the chief part of the disease, with which we had to contend, was the fever; and in consequence, immediately returned to the treatment by quinine, on the least remission; preceding it, of course, by a moderate bleeding, which we repeated according to circumstances; and alternating it with tartar emetic, &c. in the exacerbations: but we had few cases that altogether resisted the quinine, for more than one or two paroxysms. The fatal case on the river, and the other at Tatta, might be considered exceptions, but scarcely so, when we take unto calculation the circumstances under which they were placed, sailing down the Indus; and the fatal case at Thuggur bunder, had neither paroxysm nor remission in hospital; or rather, this patient may be said to have died, in the cold stage of the first paroxysm, in hospital.

The fever checked within the first two or three paroxysms, we found no difficulty with the pleuro-pneumonia; at least, as far as life was immediately concerned: not one as yet has died of the effects, even. And the three exceptions above noticed are the only fatal cases of those admitted from the 14th of December inclusive, till the regiment left Karachee in February, though these amounted to 21, in January alone. That the disease had become milder, is

true, only, as regards the fever. The 17th had only eleven during the same period, January; (9 of them in the books under pneumonia, and two under fever) and of those, no less than 5 proved fatal, or nearly 1 in 2, whereas in the Queen's, it was scarcely 1 in 10. In December, on the contrary, the 17th lost 4 in 13, (fever or pneumonia), and the Queen's, 8 in 30; the former being 1 in $3\frac{1}{4}$ and the latter 1 in $3\frac{3}{4}$.

And, it is to be remarked that in the Queen's, during the acme of the disease, under the pleuro-pneumonic treatment, we lost 5 in 8; and 2 in 2 of the mixed treatment; making in fact, all our losses that month but 1, the one at Thuggur bunder. They stand thus; Queen's Royal, December, admitted, Febris Remittens, 23; Intermittens, 7; Pneumonia, 0; Total 30. Died, Febris Remittens, 6; Pneumonia (admissions of November), 1; Peritonitis, 1; Total 8 or 1 in $3\frac{3}{4}$.

17th Regiment, Febris Remittens, 1; Con. Com. 4; Pneumonia, 8; Total, 13; Died, Pneumonia, 4; or 1 in $3\frac{1}{4}$.

In January, Queen's Royal, Febris Remittens, 14; Intermittens, 7; Total 21. Died, Febris Remittens, 2: Total; 2; or 1 in $10\frac{1}{10}$.

17th Regiment, Febris Con. Com. 3; Pneumonia, 9: Total 11; Died, Pneumonia, 5; Total, 5: 1 in $2\frac{1}{2}$.

At Larkhanu, then having medical charge of the general staff and details as well as the Queen's Royal, I had an opportunity of seeing a few cases of fever, in a detachment of the 1st (Native) Cavalry, which joined us at Kotra, but they were simple agues, and readily yielded to quinine. I saw also a Lascar with the pleuro-pneumonic fever, but the greater part of one side was hepatized on admission. He died the following day.

It is curious, I do not recollect a single case of this fever amongst the native followers; (I think, however, there was one.) Nor amongst the Officers; nor had there been, in the detachment of Horse Artillery, when they left us at Kotra, on the 9th of December.

*Causes.* From the history and most successful method of treatment, &c., it will be evident, we think, that the disease was simply the endemic fever of the Pass and Scinde, complicated with pleuro-pneumonia, from a predisposition given to the latter disease, by very recent previous residence in an extremely cold climate, with only the shelter of tents. In short, that this previous residence in an extremely cold climate, with a very rapid change into a hot, were the predisposing causes of the pleuro-pneumonia; and the endemic fever of the Pass and Scinde, the exciting; just in the same way,

as we have elsewhere shown * the previous residence in a hot climate, with a rapid change into a cold, predisposes to hepatitis and hepatic abscess; as occurred in the 2nd, or Queen's Royal Regiment in 1836 — 37, moving from Bombay to Belgaum; and in April 1839, in going from Cutch Gundava into Sewestan.

It is generally remarked, that regiments lose a number of men on changing stations; might not this, in some measure, be remedied by a better regulation of reliefs, in reference to climates, and seasons of the year? Poona to Belgaum, or vice versa, we think, might be made at any season, except during the hot winds of the former. But in moving from Bombay to Belgaum, or Bombay to Poona, some consideration ought to be given: — the period when the two climates, approximate nearest to each other, must be the best. July and January for Poona; and February or the beginning of March, perhaps, for Belgaum, after the cold easterly winds have ceased; or before these have commenced in November. Again for Karachee and Deesa, to leave Bombay in January, we think, would be best: — but these are meant only as hints; perhaps better seasons might still be found; or by making the reliefs between nearest similar climates.

The following cases will illustrate the disease.

CASE 1st. *Pleuro-Pneumonic Fever. Ketchee*, 13th December 1839. Private Alexander Miller, Ætat, 39; admitted at 11, P. M. with acute pyrexia and pain through his right chest, extending up to the point of shoulder, and preventing his breathing, he says, with slight cough and scanty sanguineous expectoration. Skin hot; tongue rather loaded; bowels regular; pulse 106, rather small and sharp; respiration confined and distressed in right chest anteriorly and posteriorly, full in left; acute tenderness of side; no rales. States, that yesterday on baggage guard, when within two miles of this camp, he was seized with shivering and pain in the side simultaneously; that the former continued a great part of the night, and was followed this morning by increased heat, slight cough and hœmoptysis. V. S. ad. deliquium (sitting up); calomel grs. x. c. pulv antimon, grs. x. et jalap comp. grs. xx. stat. Solut tartarizat (c. tart. antimon. grs. iv. et sulph. magnes ʒi. singulis libris) 2da q. q. hora, ʒii.

*Ketchee*, 14th. Became faint in the semi-erect posture at 30 ounces. Blood not cupped, and only a light trace of buffiness. Bowels moved five times freely. Pain in side no way alleviated, shivering returned at daylight, and now, 9 P. M. just going off; tongue furred; pulse 100, small, and rather weak; slight cough occasionally with scanty frothy expectoration, tinged with blood. Decubitus on left side. Contn. solut. tartarizat ut heri.

*Bahram*, 15th. 1 P. M. crossed the desert last evening and this morning. Had this morning at starting six grs. of quinine; no return of shivering; skin

* See Report for 1836 — 37, Volume 1st.

rather warm; tongue clean; pulse 84, more full; pain continues; resp. of right side not so full as left, but no rales. V. S. ad. ℥xii. sulph. quinin. grs. ii. 2da. q. q. hora.

16th. 11 A. M. marched 10 miles this morning. Bleeding yesterday omitted by mistake. Pain in the side was much increased in the evening, and he was then bled to 12 ounces with great relief; and had 10 grs. of calomel, with 10 of antimonial powder. Feels much better to-day, and respiration more low and soft, though still fullest on left side; pulse 84; bowels free. Contn. quinine, et solut. tartarizat. horis alternis.

17th. 12 noon; marched 10 miles, hot and feverish all night. Pain still continues except about the shoulders; skin hot; tongue clean; bowels free; pulse 96, small; lips much swelled, and covered with vesicles, filled with opaque lymph; respiration more calm and equal. Rept. solut. tartarizat. Ung. tart. antimon. P. D. Had six grains of quinine before starting.

18th. 1 P. M. a long march this morning, 13 miles. Pain in side continues, but not fixed as formerly; skin warm; pulse 104, small and weak. Contn. solut. tartarizat. et ung.

19th 7 P. M. halted at Larkhanu. Pain continues; cough troublesome in the night; skin cool; pulse 84; lips still swelled, large and blistered; bowels free. V. S. ad. ℥vi. Rept. quinin. et tart. antimon. horis alternis.

20th, halted, 7 P. M. pain more acute, and cough troublesome in the night, swelling of lips much reduced; skin cool; pulse 80. Contn. quinin. et tart. antimon.

21st, halted, Feels much better today; skin cool; pulse 72; respiration soft and calm. Contn.

23rd, no return of fever, still cough and pain in side. Contn. solut. tart.—Omitr. quinin. 30th, convalescent.

CASE 2nd. *Larkhanu*, 18th December 1839. 2 P. M. Private Samuel Wright, Ætat. 37. Just now admitted off camel (grazing) guard, with acute pain across his chest; dry teasing cough and pyrexia: states, that for the last three days, he has been seized about 3 P. M. with acute pain in his chest and fever, simultaneously; and that the former, though it has never entirely gone off, has always been greatly aggravated by the latter. Says they have come on earlier to day, and more violent in degree, skin hot, perspiring about the face. Countenance anxious and distressed; tongue clean; thirst urgent; bowels relaxed; pulse 104, moderate; respiration sharp, distressed in right chest anteriorly, full and soft in left, no rales. V. S. ad deliquium in the semi-erect posture, (sitting up) calomel grs. x. c. pulv. antimon. grs. x. statim. 5. P. M. Sulph. magnes. ℥iv.

19th, deliquium at 20 ounces; blood of a bright red colour, and scarcely separated from the vessel; fever went off about 7 P. M. he thinks, as soon as the medicine began to operate, and the pain remitted; aspect clear and healthy; skin quite cool; pulse 76; moderate; still some pain and cough: Sulph quinin. gr. iv. stat. et rept. 2da. q. q. hora, gr. ii. 3 P. M. pyrexia; solut. tartarizat. ℥i. 2dd. q. q. hora.

20th, fever returned and pain &c., exacerbated at 3 P. M. but in a much milder degree; perspired freely in the fore part of the night; skin cool; tongue clean; bowels open: pulse 72; still some pain and cough. Rept. quinine. ut heri. 21st, no return of fever. Contn. quinin.

23rd, convalescent, still pain in chest, and cough. Solut. tartarizat. 3da. q. q. hora. Omitr. alia.

The following cases are not my own, and therefore perhaps, are more valuable in illustrating the nature of this disease.

CASE 3rd. Abstract of the fatal case of Private Peter Cleary; Ætat, 37. Admitted 19th March, died 29th March 1840. Disease "Febris contin. Com." Constitution much debilitated in consequence (I am informed) of frequent attacks of intermitting fever, and from his debauched habits. On admission had all the usual symptoms of common fever of a low type. The disease presented nothing worthy of notice, until the 23rd, when he complained of tightness across the chest, with cough and expectoration tinged with blood. Twelve ounces of blood taken from the arm, restrained this symptom. On the 24th, the pulse was very weak; cough slight and expectoration without blood. On the 27th the pulse was 90, and he again complained of tightness across the chest. No blood in expectoration. 28th, much debility; pulse 95; tongue furred, and sordes about the mouth; slept a little. 29th, expired at 6 A. M. During the night he made no complaint. The treatment consisted in the abstraction of 12 ounces of blood from the arm, and in the application of a blister to chest, together with exhibition of small doses of tart. antimon; ipecac, and calomel in diaphoretic, nauseating and expectorating doses; Purgatives, &c. Quinine was twice given, when there was slight dimuntion of fever. During the last day, or so, a small quantity of wine was exhibited.

*Sectio Cadaveris.*—Two hours after death. Body greatly emaciated. Lungs adherent slightly to parietes of chest on both sides. The posterior and upper part of left lung partly, hepatized and congested. Large quantity of serum in pericardium. Liver healthy; Spleen much enlarged.

CASE 4th. January 9th, Private Patrick Kean. Ætat. 33, of ordinary stature, and strong muscular frame. Brought into hospital yesterday, morning complaining of acute pain in the left side of the thorax; referred to the 4th and 6th true ribs, increased by deep inspiration, and accompanied by cough and difficult expectoration. Tongue white; urgent thirst; hot dry skin; pulse 120, full and hard; bowels slow:—of one days duration. V. S. ad ℥xxx. Haust. purg. fort. Calomel, grs. iii. Antimon, tart. gr. ss. 2dis. horis.

10th. No alleviation of pain; cough rather more troublesome; expectoration difficult; hot dry skin; pulse 130, full and sharp; bowels moved once by the medicine. Reptr. v. s. ad., ℥xx., applicet. Emplast. Lyttæ. P. D. Haust. purg. fort. Contn. med. ut heri, et mist. tuss.

*Vespere.* Pain continues without any abatement; pulse 120. v. s. ad ℥xvi.

11th. About an hour after the bleeding, *remission of pain in the thorax;* cough troublesome, and expectoration still difficult; skin cool; tongue loaded with white mucus; *pulse 90, soft and regular.* Three dejections, blister risen well. Contn. ut heri. Vespere; *A recurrence of acute pain* in the thorax, extending to scapula. Two dejections; *hot dry skin; pulse* 110, full and hard. v. s. ad. ℥xvi.

12th. Experienced no relief from the bleeding; cough troublesome; expecto-

ration difficult; pulse 120, hard contracted, and vibrating; hot dry skin; tongue brown, furred in the centre; urgent thirst; one dejection; free discharge from the blister. Reptr. v. s. ad ʒxvi. contr. pil hyd. et tart. antimon. 2dis. horis; et mist. tuss.

13th. Little or no pain; slept greater part of the night; cough less troublesome; expectoration free; surface moist; pulse 105, small, soft and regular; three dejections, contr. ut heri.

14th. Cough troublesome during the night, expectoration difficult, no pain, but that of blister. Tongue dry, brown, furred; surface covered with clammy sweat; two dejections. Pulse scarcely perceptible: sulph, quinin. grs. vi. 3 is horis. Expired at 2 P. M.

*Sectio Cadaveris.* Left lung strongly adhered to pleura costalis. On cutting into the substance of the lung, several small abscesses were discovered. The right lung healthy; heart somewhat enlarged.

We selected this case to compare with the last, we shall now add a successful one, under the idiopathic pleuro-pneumonic treatment.*

Case 5th. January 6th. Corporal John Ross. Ætat. 26. Of ordinary stature and frame; moderate habits; brought into hospital yesterday morning with acute pain in right side of chest; referred to 3rd and 4th true ribs near the articulation of the sternum, increased by full inspiration and cough; expectoration difficult; tongue covered with white mucus; hot dry skin; pulse 120, full and hard; was bled to 20 ounces. Haust purgans; calomel, grs. iii. et tart. antimon. gr. ss. 2dis horis. *Vespere;* Reptr. v. s. ad ʒxx.

7th. Pain continues without abatement; cough distressing; expect. difficult; surface moist; pulse 130, full and hard. Three dejections, v. s. ad ʒxxx. contr. calomel et tart. antimom; emplast lyttæ. sterno.

8th. Little or no pain; cough distressing; expect. difficult; tongue covered with thick brown fur; great thirst; hot dry skin; pulse 98, full and hard; *mouth slightly affected by the medicine.* Four dejections; moderate discharge from blister; omitr. calomel, contr. alia.

9th. Four dejections, other symptoms stationary. Contr. antimon, tart; et mist. tuss.

10th. Continues free from pain; cough troublesome; expect. free; skin moist; pulse 120, somewhat full and sharp; bowels slow; Haust. purg. tart. antimon, gr. ss. cont. mist. tuss.

11th. Three dejections; cough diminishing; expect. free. contn. ut heri.

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* I would recommend antiphlogistic treatment pretty free during the first one or two paroxysms; but, in the remission liberal doses of quinine. If a first remission, however, when brought under observation, I would begin at once with quinine and leave venesection, &c, till the exacerbation, if any; perhaps, a moderate bleeding at the same time. If not checked, soon the lungs, we have seen, go on to hepatization and purulent infiltration; or it terminates in a chronic pleuritis or empyema:—all of which ought to be borne in mind in the after treatment.

12th. Cough troublesome during the night; expect. mucous and free. perature natural; pulse 79, soft and regular.

13th. Cough gradually diminishing; expect. free; bowels slow. Haust. stat: Contn. alia.

14th. Continues improving; four dejections. Contn. mist.

16th. Free from cough; bowels active. Contn.

18th. With the exception of debility, free from complaint. Contn. Convalescent.

In the Queen's Royal, we had two or three with chronic pleu symptoms, supposed, depending upon adhesions, but they all lieve recovered. In the 17th, however, we have three of chr pleurisy owing, we suppose, to the unfortunate wreck of the Hannah. They were all in hospital at the time, under this feve

The case of Cardiac disease at Khandár ("Smith") ought perhaps, to follow, but, as it was given at the time in a separate f we shall not further burden this report, but conclude with an ou of the case of Popliteal Aneurism. The subject of it,

Private ————, aged 41. Was admitted at Thuggur bunder, pain and stiffness of the left leg, from a pulsating tumour in the ham, the of an egg, evidently aneurismal. He knew no cause, unless it might l been leaping the nullas on route to Cabúl. He first noticed it the day we that city; and it had gradually been getting larger.

Venesection, and the usual treatment, were had recourse to, to restrain possible, till we got to a place where the man might be kept, at rest. By time, we reached Karachee, it had acquired a much larger size, was of an long shape, and completely filled the space between the ham-strings. Notw standing the man's age, &c., the operation of tying the artery in the up forepart of the thigh, was determined on.

In its execution, I had the able assistance of Drs. Hadley, H. M.'s 4 Regt. and Cahill, 1st Grenadier Regiment; also Mr. Dartnell of H. M.'s Light Dragoons, and Dr. Jopp who had recently joined the Queen's Ro We took rather a long time about it, but not a tea spoonful of blood was l and the artery was secured in the best possible manner. Not a pulsation ever felt again in the tumour. We cut both ends of the ligature close and closed the wound with sutures and straps; and the man was left in Hospital of H. M.'s 40th Regt. under the care of Dr. Hadley. After return to Karachee, with the 17th Regt. I had the pleasure of receiving noose, perfect, as the day it was put on; and the tumour was nearly gone. Fr the 20th day, there were occasionally little abscesses, and discharges of matt till the 30th, when the noose was discharged.

The operation was completely successful, but in a similar case whether b ends of the ligature, should be cut off, as in this, we were not agreed. I thi I should again cut, for the adhesion by the first intention is the grand obje till the artery is secured by nature. Dr. Hadley, however, saw it another light; it was a continual source of anxiety to him till discharged.

## ARTICLE. XII.

### *orological observations on the Mahabudeshwur hills. Lat. 17° 56′ N. Long. 73° 30′ E. Heighth above the Sea 4500 feet.*

*Shewing the Means and Extremes of Temperature &c., for each Month* (1828 —1838.)

| in the shade | | | | | Out-door Temperature in the sun. | | | | Atmospheric Humidity. | | Evaporation. | | Rain. | | | | | Winds. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extremes. | | | | Means. | | Extremes. | | Means | Extrs. | Means | Extrs. | Means. | | | | xtrs. | | | |
| CESSIVE MONTH | Extreme daily variation of Temp. | Ex. monthly var. of Temperature. | Extreme Maximum Temperature. | Extreme Minimum Temperature. | Mean Max. Temp. in the sun. | Mean Max. amt. of Solar Radiation. | Ex. Max. Temperature in the sun. | Ex. Max. amount of Solar Radiation. | Mean depress. of moist-bulb Ther. | Ex. depression of moist-bulb Ther. | Monthly evaporation. | Extreme daily evaporation. | Day fall. | Night fall. | Total monthly fall. | No. of rainy days. | Extreme daily fall. | Direction. | Force. | Appearance of the sky, &c. |
| | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | | | | | | | | | | |
| | 15.8 | 19.5 | 78.5 | 54.0 | 99.6 | 26.4 | 113.0 | 39.0 | 7 .6 | 15.2 | 11.30 | 0.58 | 2.02 | 1.55 | 2.23 | 5 | 2.15 | vbl. | Light. | Cloudy, with drifting fogs first half, subsequently clear. |
| | 16.5 | 21.0 | 72.5 | 51.5 | 95.3 | 24.4 | 113.0 | 38.7 | 7.4 | 13.8 | 8.45 | 0·58 | 1.14 | 2.14 | 6.45 | 7 | 4.32 | Easterly | Modert. | Clear. |
| | 15.5 | 24.5 | 73.5 | 48.5 | 95.1 | 25.5 | 110.0 | 40.0 | 7.3 | 12 0 | 10.45 | 0.59 | .. | .. | 0.08 | 0 | 0.35 | do. | Fresh. | Do. |
| | 17.0 | 30.5 | 75.5 | 45.0 | 94.5 | 26.0 | 109.0 | 41.0 | 11.5 | 16.0 | 15.58 | 0.66 | .. | .. | 0·00 | 0 | 0.05 | do. | Do. | Do. |
| | 20.0 | 32.1 | 79.5 | 46.0 | 101.5 | 27.1 | 117.0 | 39.0 | 13.1 | 18.6 | 10.86 | 0.51 | 0.03 | 0.04 | 0.10 | 0 | 1.35 | ENE. NNW. | Light. | Do. |
| | 20.7 | 33.5 | 87.0 | 49.5 | 109.9 | 28.7 | 127.0 | 44.5 | 15.6 | 21.5 | 17.44 | 0.79 | 0.03 | 0.05 | 0.12 | 1 | 0.68 | NE. NNW. | Do. | Do. |
| | 20.6 | 34.5 | 90.5 | 56.0 | 106.3 | 24.5 | 125.0 | 39.5 | 14.8 | 23.5 | 16.78 | 0.80 | 0.62 | 0.01 | 0.74 | 3 | 1.70 | do. | Fresh. | Do. with occasional clouds. |
| | 22.0 | 30.7 | 89.0 | 57.3 | 97.4 | 19.6 | 124.0 | 38.5 | 11.3 | 24.0 | 14.96 | 0.62 | 1.77 | 0.86 | 3.14 | 4 | 4.42 | do. | Do. | Do. with cloud and frequent fogs latter half. |
| | 18.5 | 21.8 | 82.0 | 56.5 | .. | .. | . | ... | 2.8 | 6.0 | 2.28 | 0.44 | 20.83 | 19.27 | 36.77 | 23 | 11.32 | wsw. | Modert. | Foggy. |
| | 8.0 | 11.8 | 73.8 | 60.0 | .. | .. | .. | .. | .. | .. | 0.33½ | 0.02 | 36.59 | 35.57 | 73.74 | 30 | 11.30 | do. | High. | Continued dense fogs |
| | 8.0 | 10.0 | 70.8 | 60.0 | .. | .. | .. | .. | .. | .. | 0.25½ | 0.02 | 38.14 | 36.53 | 82.58 | 30 | 12.67 | do. | Do. | Do. do. |
| | 14.0 | 17.0 | 77.0 | 56.0 | .. | .. | .. | .. | .. | .. | 0.53½ | 0.07 | 20.66 | 18.63 | 23.24 | 24 | 13.06 | do. | Modert. | Frequent light fogs. |
| | 22.0 | 34.5 | 90.5 | 45.0 | 99.9 | 25.2 | 127.0 | 44.5 | 10.1 | 24.0 | 109.2½ | 0.60 | 121.83 | 114.65 | 229.19 | 127 | 13.06 | | | |

*Table II. Shewing the Means and Extremes of Temperature &c., for each Season* (1828—1838.)

| Seasons. | Mean Teperature. | Mean daily variation of Temperature. | Mean Maximum Temperature. | Mean Minimum Temperature. | Mean Temperature at 9 A. M. | Mean Maximum Temperature in the sun. | Mean Maximum amount of Solar Radiation. | Difference of Mean Temp. of coldest & hottest months. | Difference of Mean Temp. of each season & the Annual Means. | Diff. of Mean daily var. of each season & the Annual Means. | Diff. of Mean Temp. of each successive season. | Mean difference of moist bulb Thermometer. | Amount of Evaporation. | Fall of Rain. | No. of Rainy days. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° ′ | ° | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ° ′ | ′ | ° ′ | | |
| Cold Season. .1st October to 28th February | 64.0 | 11.9 | 70.0 | 58.0 | 64.2 | 97.2 | 25.8 | 5.1 | 2.2 | 2.1 | 0.3 | 9.4 | 56.67 | 8.86 | 12 |
| Hot Season....1st March to 31st May..... | 72.4 | 14.2 | 79.7 | 65.3 | 73.9 | 104.5 | 24.2 | 3.0 | 6.2 | 4.4 | 8.4 | 13.9 | 49.18 | 4.00 | 8 |
| Rainy Season..1st June to 30th September . | 64.4 | 3.9 | 66.4 | 62.4 | 64.8 | .. | .. | 3.0 | 1.8 | 5.9 | 8.0 | .. | 3.40 | 216.13 | 107 |

*Note.*—The Temperatures in the shade, are taken from Thermometers suspended out of doors in a verandah protected by a thatched roof from the direct influence of the solar rays, but freely exposed to the open air on the northern side:—the mean temperatures being deduced from observations taken at the two periods of greatest cold and heat.—The Temperatures in the sun are taken from a Thermometer (with its bulb covered with coarse black wool,) supported horizontally, three feet above the ground, on a light wooden frame, which admits of the free circulation of air, around it.—The atmospheric humidity is ascertained by wetting the bulb and lower part of the stem of a Thermometer, wrapped in muslin, with cold water, and observing the amount of depression arising from the cold produced by evaporation.

The observations on solar radiation extend only to two years;—those on the moist-bulb thermometers, are for four years;—on evaporation for one year;—and the separate registration of the day and night fall of rain for six years:—all the other observations embrace a period of ten years.

*Summary of mean and extreme decennial results.*

| | |
|---|---|
| Mean Annual Temperature in the shade. | 66° 2. |
| —— Daily Variation of Temperature in the shade. | 9° 8. |
| —— Maximum Temperature in the shade. | 71° 2. |
| —— Minimum Temperature in the shade. | 61° 3. |
| —— Temperature at 9, o'clock A. M. in the shade. | 66° 8. |
| —— Temperature of the cold season in the shade. | 64° 0. |
| —— Temperature of the hot season in the shade. | 72° 4. |
| —— Temperature of the Rainy Season in the shade. | 64° 4. |
| Extreme Daily Variation of Temperature in 10 years. | 22° 0. |
| —— Monthly Variation of Temperature in 10 years. | 34° 5. |
| —— Yearly Variation of Temperature in 10 years. | 43° 1. |
| —— Range of Temperature in 10 years. | 46° 0. |
| —— Maximum Temperature in 10 years. | 91° 0. |
| —— Minimum Temperature in 10 years. | 45° 0. |
| Difference Of Mean Temperature of the Cold and Hot Season. | 8° 4. |
| —— Of Mean Temperature of the coldest and hottest months of the year. | 12° 2. |
| —— Of Mean Temperature of each season and the annual mean. | 3° 4. |
| —— Of mean daily Var. of each season and the annual mean. | 4° 1. |
| —— Of Mean Temperature of successive months. | 2° 6. |
| —— Of Mean Temperature of successive seasons. | 5° 6. |
| Mean Maximum Temperature in the Sun, during the cold and hot seasons. | 99° 9. |
| —— Maximum amount of Solar Radiation in the Sun during the cold and hot seasons. | 25° 2. |
| Extreme Maximum Temperature in the Sun during the cold and hot seasons. | 127° 0. |
| —— Maximum amount of Solar Radiation in the Sun during the hot and cold seasons. | 44° 5. |
| Mean Annual amount of Rain, | Inches 229. 19. |
| —— Annual Day-fall of Rain, | Inches 121. 83. |
| —— Annual Night-fall of Rain, | Inches 114. 65. |
| —— Number of rainy days. | 127 |
| Extreme Annual fall of Rain, | Inches 297. 41. |
| —— Monthly fall of Rain, | Inches 118. 54. |
| —— Daily fall of Rain, | Inches 13. 06. |
| Mean Depression of Moist-bulb Thermometer. | 10° 1. |
| Extreme Depression of Moist-bulb Thermometer. | 24° 0. |
| Mean Annual Evaporation, | Inches 109. 25. |

# APPENDIX.

# APPENDIX.

## 1.

*Abstract of the annual reports, for the years* 1838 *and* 1839, *of the field detachments stationed at Balmeer, by the late* Assistant Surgeon S. P. Prichard.

SITUATION. The town of Balmeer is situated on the eastern side of a range of hills, which runs in a direction nearly from north to south in N. Lat. 25° 40′ E. Long. 7° 30′. The population is rated at 3,000; the houses are built on the sides of the hill, and extend about half way up its height. The camp is situated on a plain about two hundred yards to the east-ward of the town, and is surrounded by a low thin jungle, which in many parts, to the distance of six or eight miles, has been nearly cleared away, for firewood, within the last four or five years. The surface of the surrounding country, is covered with light sand; in some places from two to four feet in depth, and underneath, a stratum of very compact hard mohrum, is generally found.*

CLIMATE. In regard to the climate of Balmeer, more detailed observations will be found in the register for 1837, kept by Mr. Forbes and published, in August 1838, in the proceedings of the Bombay Geographical Society, than are to be obtained in these reports.

The following table is a comparative view of the fall of rain at Balmeer for the years 1837, 1838 and 1839.

*Register of pluviometer for the years of* 1838 *and* 1839.

| | 1837. | | 1838. | | 1839. | |
|---|---|---|---|---|---|---|
| | In. | Cts. | In. | Cts. | In. | Cts. |
| January | . | . | . | . | . | 75 |
| February | . | 15 | . | . | . | . |
| March | . | . | . | . | . | 9 |
| April | . | . | . | . | . | 5 |
| May | . | 10 | 2 | 94 | . | 10 |
| June | . | 98 | . | . | . | . |
| July | 3 | 75 | . | 30 | 13 | 7 |
| August | 3 | 39 | 3 | 34 | . | . |
| September | . | 42 | . | 91 | 2 | 21 |
| October | . | . | . | . | . | . |
| November | . | 12 | . | . | . | . |
| December | . | . | . | . | . | . |
| Total | 8 | 91 | 7 | 49 | 16 | 27 |

* For a full account of this part of Marwar, reference may be made to a paper by F. Forbes, A. M., Assistant Surgeon, published in the proceedings of the Bombay Geographical Society, in August 1840.

Diseases. The disease, to which Mr. Prichard chiefly calls attention in his report for 1838, is a form of scorbutus, of which during the first six months of the year, he saw eleven cases; the symptoms of the disease are thus described. "The patient complains of pain in the legs, particularly the calf; the gums become spongy, bleed on being touched and separate from the teeth which become loose; the tongue is white and glossy; pulse quick and weak; urine high coloured and passed in small quantity; contraction of the muscles of the calf takes place; the patient loses his appetite; the countenance becomes sallow followed by great dejection of spirit, and emaciation." In three cases, I recollect observing patches of a livid colour on different parts of the body; but only in two cases, was there any oppression at the præcordia."

In regard to the treatment, Mr. Prichard observes, "As to remedies in this disease, the only one in my opinion that can be depended upon, is change of air; but, as a residence of some few months in the place, seems to me, to be necessary to its production, I feel confident, that relieving the detachments half yearly, instead of annually, would be attended with the greatest benefit and I trust, this will be brought to the special notice of Government by the superintending surgeon." Mr. Prichard attributes this scorbutic affection to the deficient supply of water, its brackish quality; and to the scarcity, during the greater part of the year, of vegetables or fruit.

During the year 1839, only three slight cases of scorbutus occurred, but no cause is assigned for this decrease.

*Fevers.* During the year 1838, were infrequent, and the few cases, chiefly occurred in the detachment of the 6th Regiment N. I. which arrived at Balmeer early in June, and had been exposed to considerable fatigue, during its march from Deesa.

In the year 1839, during the months of September and October, numerous admissions of fever, chiefly quotidian, are borne on the hospital returns. Mr. Prichard offers the following explanation of the prevalence of fever during these months. "On casually looking over the monthly admissions, the vast difference between the number of fevers admitted in September and October 1839, and those admitted in the same months in any preceding year, might doubtless be attributed, to the increased fall of rain at Balmeer. The mystery is easily solved, by stating, that the troops marched on Gurra on the 3rd September, and remained there under canvas until October 2nd. Gurra is situated on the banks of the river Loonee. About the 12th September the rain came down in torrents; 6 or 8 cavalry tents were slit up:—for four days, it continued to rain occasionally, and I should say, at least 5 inches fell (the pluviometer was in use at Balmeer). The water lodged in all directions around us. In addition to this, very heavy dews fell at night, and the men, contrary to order, were frequently found sleeping in the open air:—who then can wonder at the result?" "Out of 260 men who went to Gurra, 89 were admitted with fever during September and October, exclusive of readmissions; out of 100 men who remained at Balmeer only 9 fever cases were admitted during the two months; giving in the former case, a per centage of nearly 35; in the latter only 9. The fall of rain at Balmeer was not half so heavy as that at Gurra, it being only 2 inches and 21 cents. It may be said, that we should look to the natives of the place to judge of the healthiness or unhealthiness of the season: fever was certainly prevalent amongst them, but where were they dur-

ing the rains? not in their houses, but living in their fields, with scarcely a rag to protect them.

*Other Diseases.* Rheumatism is described as of frequent occurrence, chiefly in the cold months, and is generally obstinate and difficult to remove. Injuries of the feet, are very often succeeded by sympathetic buboes. Whitlows and large indolent boils are common.

*Surgical Cases.* On the frequency of accidents in 1838, Mr. Prichard remarks "The number of accidents amongst the Troopers and Syces at watering parades, has been very great, which I attribute to two causes, 1st, the confined and badly constructed place where the horses are watered, and 2dly, to a number of vicious horses in the squadron; three of which have been lately castrated. The former cause will, I trust, soon be removed, as a commodious trough for watering the horses, is laid down in the plan of the well now in progress; to the latter, of course, we must be always more or less subject."

The Surgical cases were as follows.

*Fractures.* Thigh, oblique, 2 cured. Leg, tibia and fibula, 1 cured. Leg, tibia compound, 1 cured. Dorsum of the scapula, 1 died.

The case of fracture of the scapula, occurred in a sepoy of the 6th Regiment; whilst under treatment, scorbutic symptoms came on; he was sent to Deesa for change of air, and died suddenly, the day after his arrival: two pounds of extravasated blood, were found at the site of the fracture.

The other cases were, 1st, amputation of the arm in a Bheel, the extremity having been nearly separated by a sword wound; 2nd, amputation of the middle finger of the right hand, at the metacarpal joint, in consequence of caries of the bones resulting from whitlow; 3rd, lacerated wound of the forearm from the bite of a horse; 4th, severe lacerated wound of the muscles of the thumb; 5th, wound of the deep palmararch, cured by compression; 6th, a case of snake bite treated successfully with Liquor ammoniæ, and other stimulants — this case was similar in nature to those described by Mr. Forbes at p. 16 and 17 of the 2nd volume of the Society's transactions; 7th, a wound across the tarsus from the bite of a horse; 8th, a case of extensive sinus successfully treated with injections of sulphate of zinc. 9th, four fatal cases of burns caused by the conflagration of a chuppured tent.

In 1839. There were only two surgical cases worthy of notice, 1st, fracture of both bones of the leg. 2nd, fracture of the ulna.

*Vaccination.* On this subject Mr. Prichard remarks in the report for 1838, "With regard to vaccination, several attempts have been made with lymph sent from Deesa, but we have not been able to succeed in any one instance." "An arrangement was made by Captains Richardes and Prescott, in March, to enable a native assistant to vaccinnate through the different villages between Deesa and this place, and thus bring it fresh from village to village; but the assistant did not make his appearance and we must now endeavour to get it out with the relieving detachments."

## 2.

*Meteorological observations, chiefly on Solar radiation, made at Mhow, by* A. Weatherhead, Esq., .M. D.

The following extracts have been taken from Dr. Weatherhead's annual report of the 7th Regiment N. I. for the year 1839, and from a letter subsequently addressed by that Gentleman, to the Secretary to the Society.

"I may here state, as probably in connection with the prevalence of fever lately, the extraordinary results of some of the Meteorological observations made here; in the hottest time of the year, in the course of April and May, the actinometer gave a mean of 160°, while the mean heat of the air in the shade at the same time, was 98°; shewing 62° due to the intensity of the solar rays, — a great amount. But, observations by the same instrument, in December, gave a mean of 152° 5′ while the mean heat of the air in the shade, was 79° 5′; shewing no less than 73° due to the intensity of the solar rays. Further observations at the former period, the hottest season, by a thermometer exposed freely to the action of both sun and wind, gave a mean of 123°; shewing 160° — 123° = 37 to be due to the cooling effect of the wind; while in December, the same observations gave a mean of 93° 7′; shewing 152° 5′ — 93° 7′ = 58° 8′, due to the cooling effect of the wind. This shews, that the less heat, to which bodies in the open air, are exposed in the cold than in the hot season, is due, much more to the cooling effect of the wind, than to any difference in the absolute intensity of the solar rays in the hot weather; therefore, bodies freely exposed during the day in the open air, were subject to a variation of 37° of temperature; while in December, it amounted to 58° 8′. And, although the condition of complete protection from the cooling effects of the wind, is perhaps never complete yet in the lee of walls, &c. it is far carried out; and in camps, villages, &c., where the currents of air are constantly varying, the variations of temperature to which bodies are exposed during the day, is immense. The absolute variation in 24 hours, to which bodies thus freely exposed, are subject, is still more extraordinary, and may be shortly stated thus; in December an æthrioscope gave a mean of 40° as the temperature, to which bodies freely exposed in the open air, at sunrise, were subject, while the actinometer gave 152° as the mean, to which bodies freely exposed to the sun's rays, and completely sheltered from currents of air, were subject; therefore, bodies were exposed in the 24 hours to a variation of 152° — 40° = 112°; and although the two conditions, are never perhaps both fully attained, yet men on guard, and on parade or drill at day light, realize entirely the one; and men wandering about the bazaars and camp, most frequently approach the other. I may state, that somewhat similar results were found from observations at Sholapore in 1837.

The other circumstance I would remark, of this climate of Malwa, is its extreme dryness in the cold season; it is considerably more dry here, than I found it in the Deccan, by similar observations; I cannot state the mean, as out of 29 days, on 20, it was more dry than Leslie's tables are calculated for; but it was certainly more dry than in the hottest season, and on two days the observations shewed, that there was not one grain of moisture in a cubic mass of air of 40 inches.* * * * * * * * *

" The results of observations in January and February 1840, are very similar to those of December, and the remarks made in the annual Report are quite applicable; those of the hot months of April and May this year, differ from those of last year, in the mean absolute intensity of the Solar rays, being about 8° higher, viz. 163°; and in the amount due to the cooling effect of the wind, being much greater; so that the variation of temperature, to which bodies exposed in the open air, were subject, was nearly as great as in the cold months. I beg leave to send the following detailed observations on those points, as they may perhaps be of use in drawing comparisons.

| | Bushire, Persia, January 1836. Observations on 10 clear days. | Bassadore, Persia, February 1836. Observations on 11 clear days. | Bassadore, March 1836. Observations on 16 clear days. | Sholapore, Deccan, April 1837. Observations on 19 clear days. | Sholapore, May 1837. Observations on 20 clear days. | Sholapore, June 1837. Observations on 7 clear days. |
|---|---|---|---|---|---|---|
| Mean daily maxima in the shade . . . . . | 56.6 | 68.4 | 73.6 | 100.8 | 103.9 | 94.3 |
| Exposed to the sun's rays . . . . . | 133.2 | 126.3 | 133.5 | 147.4 | 145.0 | 138.7 |
| Due to intensity of solar rays . . . . . | 76.6 | 57.9 | 59.9 | 46.6 | 41.1 | 44.4 |
| Exposed to sun and wind . . . . . | 66.7 | 81.4 | 79.5 | 131.8 | 134.7 | 124.3 |
| Due to the cooling effect of the wind* . . . . | 66.5 | 44.9 | 54.0 | 15.6 | 10.3 | 14.4 |

| Sholapore, August 1837. Observations on 8 clear days. | Bassadore, September 1835. Observations on 26 clear days. | Sholapore, September 1837. Observations on 13 clear days. | Bassadore, October, 1835. Observations on 11 clear days. | Sholapore, October 1837. Observations on 14 clear days. | Akulkote, December, October, 1838. Observations on 12 clear days. | Sholapore, November 1837. Observations on 5 clear days. | Akulkote, November 1838. Observations on 11 clear days. | Bushire, Persia, December, 1835. Observations on 3 clear days. |
|---|---|---|---|---|---|---|---|---|
| 91.5 | 91.1 | 89.0 | 86.8 | 91.0 | 91.7 | 85.4 | 85.8 | 60.7 |
| 138.2 | 138.3 | 151.2 | 142.4 | 164.7 | 148.0 | 141.6 | 148.9 | 130.7 |
| 46.7 | 47.2 | 62.2 | 55.6 | 73.7 | 56.3 | 56.2 | 63.1 | 70.0 |
| 122.1 | 99.6 | 125.6 | 99.4 | 131.2 | 127.5 | 110.8 | 126.9 | 79.0 |
| 16.1 | 38.7 | 25.6 | 43.0 | 33.5 | 20.5 | 30.8 | 22.0 | 51.7 |

These observations corroborate the results found at Mhow last year; that there is little difference, in the absolute intensity of the Solar rays, in the cold and hot seasons; that in the cold season, the less heat, to which, bodies in the open air, are subject, is principally due to the cooling effect of the wind, and that the variation of temperature, to which they are then subject, on clear days, is considerably greater than in the hot months. The contrast of columns 1

* Or amount of variation of temperature, to which bodies in the open air in clear days, were constantly exposed.

and 5, is remarkable. The only instrument it has been in my power to use, is the common thermometer in various ways; the observations are therefore no doubt imperfect. I may say however that great care has been taken in noting them, and that they have been as far as possible, made under the same conditions. For an actinometer I have covered the bulb with black silk, and introduced it, into a common cylindrical lamp, carefully closed at the bottom, resting it on a cushion of cotton, and the top carefully stuffed with the same, to exclude all air, and thus exposed in a sloping position, to the sun's rays. The observations on the effects of the wind, were made on a thermometer, exposed freely to its action, and also to that of the sun's rays, on the ground, and protected from the reflected heat, by a thick cushion of cotton on which it rested. Those on the heat in the shade, were made on a thermometer, about 5 feet from the ground, protected from reflected heat, by its case, and by the projection of the verandah above. Those observations mentioned as taken by an œthrioscope, are simply, on a thermometer exposed all night, resting on a cushion of cotton, on the ground, in an open space, in a sloping position, so as to be freely exposed to radiation: the former observations were made at 2 P. M. and the latter at sun-rise."

## 3.

*Notes on the Scurvy, as it has appeared at various times, in the Jail at Rutnagherry, by* J. Bourchier M. D.

"The disease is said to have existed, among the prisoners in this Zillah, as early as the end of the year 1821, or beginning of 1822. This is stated, on the authority of a letter from the criminal Judge of Ahmedabad, dated 23rd of February 1825; and the criminal Judge of the Southern Koncan confirmed the same, in a letter (dated 7th Novemer 1825) regarding 100 convicts transferred to the former Zillah on the 13th May 1822. But, whether these men ever landed here or were forwarded direct from Malwan, is even doubtful; though in the former case, they could not have been quite six weeks in this place, which was made the principal station of the Zillah at the end of March 1822.

It appears from the Hospital records, that the disease was always most extensively prevalent in the months of December, January, February, and March. It was first specifically named in the returns in July 1836, agreeably to instructions received from the Medical Board.

It is confidently stated by the late Dr. Stewart, in the records of the hospital, that after particular enquiry, he is satisfied that no one caste is more obnoxious, than another to the disease; my own experience has hitherto been too limited to allow of my offering any positive opinion on this point, but as far as I have had opportunities for observation, by far, the greater number of those affected, have been Mahars, or others of the lowest caste.

Some who were the subjects of the disease had been only 15 days in the Jail, others two years. These are stated as extreme points, and a doubtful average period of 19 months is given by Dr. Stewart, as the time which elapsed, before scorbutic symptoms declared themselves.

During a residence of six years in various parts of the Konkan, Dr. Stewart had never seen a case of scurvy, but in this Jail, and states that it does not exist in Rutnagherry, nor in any of the surrounding villages. It has hap-

pened to me, to see two or three cases among sepoys of the rangers, who had come in from Tannah; one of them most inveterate, exhibiting all the worst characters of the disease.

The years 1833, 1834 and 1835, were remarkable for the extensive prevalence of scurvy in the Jail. In 1836, there were only five cases, and in 1837 none. During the past year, only two slight cases presented themselves, but in February of the present year (1839) four prisoners were admitted with severe scorbutic symptoms, and of these, one died.

*Supposed Causes.* Of course much attention has been paid, to discover the causes of this malady, and the water of the Jail wells, has been more suspected than any other source. But Mr. Henderson, Acting Superintending Surgeon, who in this belief suggested, that it should not be used during a certain portion of the year, was of opinion that this endemic did not owe its origin to any single cause. The wells in the Jail are four in number, and were brought into use in 1827 when the building was first occupied. At the recommendation of the Medical Board, grounded on Mr. Henderson's suggestion, no water from these wells, is now used for cooking or drinking, from the 1st November in each year, to the setting in of the monsoon. This regulation was first enforced in 1835. During this period, being more than half the year, Bheestees are employed in the proportion of one to fifty prisoners. They bring water, for the above mentioned purposes, from two wells, one of these, is situated immediately in front of the Jail, and at a somewhat lower level, with only the road intervening. From this, the Brahmin prisoners, owing to their religious prejudices, are allowed to supply themselves. The other well is situated to the southward, and distant about a quarter of a mile, considerably below the level of the Jail; it always affords a plentiful supply of good water. The sick are at all times supplied in the same way as the other prisoners.

The several wells within the Jail, when in use, are not now respectively appropriated to different castes, as appears formerly to have been the case; only, the Coomars and Mhars are not allowed to draw water, but are supplied by the other prisoners The supply of water, begins to decrease towards the end of December, and from that time, continues gradually to diminish. In the month in which these notes are written (March 1839) only one of the wells affords a copious supply; the water drawn from it, is clear and pure in appearance, nor does it let fall a sediment, on standing. That from the other three, is cloudy, and of a yellowish colour on being drawn, and after standing 24 hours or more, throws down a copious yellowish brown sediment, and shows a great quantity of flocculent particles of a similar kind, suspended throughout the fluid.

No cases of Scurvy have ever occurred among the female prisoners, whose diet is the same as that of the men, and whose confinement is more strict; there are generally from 15 to 20, who occupy a separate compartment of the Jail; their sleeping cells are smaller and warmer than the men's, and none of them, ever go beyond the limits of the small yard, in which they are confined. One has been twenty years a prisoner, and an inmate of this Jail from the time it was first occupied in 1827, and others for various periods of considerable duration.

As this paper is not intended as a medical dissertation, but a mere collection of facts bearing on the history of this disease, in a particular locality, I shall

not indulge in speculation, further than to state my belief, that the water of the Jail wells has, with reason, been suspected as a principal cause, at a certain season of the year, of the mischief; and I have understood, that the late Mr. Lawrence first directed Mr. Henderson's attention to this important point. A glance at the table appended to this paper, will show, that the disease was nearly extinguished by the judicious measure of forbidding the use of this water for seven months of the year; which order was issued in 1835, as already stated, but not till just before the setting in of the monsoon, and consequently too late to reduce materially the number of cases of scurvy in that year. But in the next year, only five cases presented themselves, (perhaps continued from the preceding) and in 1837, none.

The disease has lately again shown itself, but not to any very serious extent; with scarcely an exception, it has been confined to the Mhars, and has attacked only young and robust men. They ascribe it to the privation of tobacco, and though this statement should not be too implicitly credited, considering their great anxiety for the restoration of this indulgence, it may yet be thought worthy of consideration. These men had been accustomed to smoke the leaf, and to use the ashes as a dentifrice.

*Table of Scurvy cases admitted into the Jail Hospital at Rutnagherry during the undermentioned years.*

| Months. | 1833. | 1834. | 1835. | 1836. | 1837. | 1838. | 1839. |
|---|---|---|---|---|---|---|---|
| January | 21 | 12 | 10 | 1 | .. | .. | 2 |
| February | 17 | 3 | 19 | 2 | .. | 1 | 4 |
| March | 10 | 4 | 13 | .. | .. | 1 | 2 |
| April | 5 | 5 | 21 | .. | .. | .. | .. |
| May | 10 | 8 | 4 | .. | .. | .. | .. |
| June | 4 | 8 | 5 | .. | .. | .. | .. |
| July | 2 | 5 | 7 | .. | .. | .. | .. |
| August | 10 | 1 | 7 | 1 | .. | .. | .. |
| September | 6 | .. | 5 | .. | .. | .. | .. |
| October | 5 | .. | 8 | .. | .. | .. | .. |
| November | 6 | 3 | .. | 1 | .. | .. | .. |
| December | 4 | 9 | 1 | .. | .. | .. | .. |
| Yearly Total ... | 100 | 58 | 100 | 5 | .. | 2 | 8 |

RUTNAGHERRY, March, 1839.

4.

*Description of the operation of Lithotomy as performed by a native Surgeon in the presence of* A. Gibson, Esq. *Communicated by that Gentleman in a letter addressed to the Secretary to the Society.*

"I take the liberty of sending you an account of an operation for Lithotomy, which I lately witnessed, and which was performed by a native Surgeon.

The subject of the operation, was a boy aged 8 years, who had for the last two years laboured under all the symptoms indicating the existence of a stone in the bladder. No preparation of the system by medicine, was had recourse to previous to the operation. The patient having been made to stand upright, and to stretch his arms and body as much upwards as possible, several times, was then seated on a chair temporarily formed by the crossing of several

strong folds of a native cummerbund across, and under the thighs of the principal assistant, who kept the seat tight, by holding his limbs well apart. This man was supported in this position, laterally and posteriorly, by the backs of 4 men seated close to him.

The little patient was now seated in the lap of the principal assistant, and the operator proceeded to press the abdomen obliquely downwards, by the hand inclined against the umbilicus. This having been done, he introduced the fore and middle fingers of his left hand into the rectum, and having apparently secured the stone in a position; he proceeded to cut down, towards it, with an old penknife. The incision began half an inch from the anus and was continued, obliquely outwards, forming an angle of about 45° with the perineal raphe. It was a gradual dissection rather than a blind thrust, and he cut deepest anteriorly; the part of the bladder intended to be pierced, was apparently behind, and laterally to the cervix. The flow of urine having indicated, that the bladder had been pierced, the inner incision was slightly enlarged by the edge of the knife, turned backwards; and the knife having been withdrawn, a common iron hook was passed into the bladder; and having hooked the stone, it was extracted by a see-saw motion, of the hand. The hook used, was slightly concave on its interior side. The stone having been extracted, the patient was made to sit down in a hip bath, and was immediately made to chew, and swallow a lump of assafœtida, weighing about half of a drachm, and thereafter, a purgative dose consisting of Ol: Ricini and tamarind juice was administered. Within the lips of the wound, was placed a half masticated mouthful of Pan, and Betle-nut, and the patient was put to bed.

After the 15th day, the urine began to flow by the natural channel, and the patient, is now in good health. The stone was apparently of the most common species, viz. that formed from uric acid. The time occupied in the operation, did not exceed 7 minutes.

The operator in this case, was a "Shustr Weydh" or operating Physician named "Boodun." He lives at the village of Jowla near Seroor, and appears to make a good livelihood by travelling about as an operator. He shewed me, about 20 stones which he had taken from different people, and said, that he had possessed many more, but that he had sold them to different people, to whom they had been prescribed as medicine. I know, that these calculi are esteemed by the natives as a remedy in Epilepsy, and some other affections of the nervous system.

The same operator operated next day, on a boy some miles distant from this place: — that patient has also since recovered. The same man frequently operates in cases of cataract, staphyloma, dropsy, and in short in all cases, requiring the use of the knife. In operating for the extraction of piles he previously applies an arsenical ointment, and little cutting is thereafter required. In amputations, he ties the vessels with silk ligatures, or uses the actual cautery according to circumstances. In ascitis, and hydrocele, he punctures with a lancet, and afterwards inserts a clumsy tube of brass like a blowpipe. To excite irritation in the eyelids in cases where it is wished to promote the absorption of a speck, he uses the legs of a "Gomusa" or horse fly caught for the purpose.

True to the Indian principle of a limited circle of art, beyond which, he cannot pass, he meddles only with diseases requiring the knife. Of those which

do not admit of its use, he professes to know nothing: — thus, a simple fracture he cannot set, but let the fracture be compound, with protruding bones, and flesh wounds, it then falls within his surgical province; and he informs me, that in one case, he cut out the lower half of a tibia, and supplied its place with the fresh leg bone of a deer, which afterwards became an integral part of the restored limb. That this operation is performed by native Surgeons, I have heard before, but I could not succeed in procuring an inspection of one man, on whom it had been performed, in Ahmednuggur: when I enquired for him, I found, he had gone with his camels on service.

The above mentioned practitioner is most desirous, to possess a couple of trocars, and I would feel happy to present him with the same, in case, the Medical Board, or Government, should see fit to authorize me, to do so.

I ought to mention, that his lowest charge for the operation of Lithotomy is Rs. 5. From a substantial cultivator he would expect from Rs. 15 to 20; besides, the keep of his mare, and rations for himself, for a few days.

GOVERNMENT GARDEN HEWRA. 23rd June, 1840

5.

*A short notice of the station of Karrachee in Lower Scinde: by* F. S. Cahill, M. D. *in a letter addressed to the Superintending Surgeon.*

"In reporting upon the state of health of the Regiment (2d Grenadiers) under my medical charge, for the months of August, September and October; I have the honour to state, that for the period referred to, which embraces the unhealthy season, I have never known a Regiment, at any of our stations, more efficient. The sick for the last 3 months, have been comparatively few, particularly, when it is considered, that 18 chronic cases of unfits, were borne upon the Hospital returns.

The diseases were generally of a simple and tractable nature, and none prevailed epidemically. The casualties were two, in the month of August; one died of chronic dysentery, the other of scurvy; in September none; in October none. Of 13 European officers at head quarters, only one required medical attendance, and that for an injury. Chronic rheumatism has been the prevalent disease; chiefly attacking the old sepoys, most of whom, have been in hospital with it for many months; much of the disease may be fairly attributed to the harrassing night duties, under heavy dews, which were requisite on our arrival in Scinde. For since these duties have been in a great degree, dispensed with, and temporary lines and sentry boxes erected, but few cases of rheumatism have come into hospital and these were soon able to return to duty. We have had few cases of fever; these slight and not complicated with visceral disease. They might be referred more to accidental causes, viz. exposure to night damp, and escort duties in the sun. There is no other disease included in the returns for August, September and October, which calls for particular mention; the cases being such as are of common occurrence unconnected with climate. Individuals who were unhealthy in Guzerat, i. e suffering from fever, every spring, have enjoyed tolerably good health here. That the climate does not tend to weaken or subdue the constitution, is I think, evinced by the fact of the men looking healthy, and more robust, than on the arrival of the regiment, 9 months ago.

In addition to the charge of a regiment, my office as staff surgeon to the Scinde reserve, has afforded me a wider field, for observing the physical effects of the climate, upon that class of servants, who are necessarily the most exposed, and most worked, —the camp followers; and with the exception of those, who were the victims of cholera, the ratio of casualties, did not exceed what might be calculated upon, at any other station. Since the cholera left us, it cannot be said, that any disease prevailed epidemically among these people. Of the commissioned officers of the staff, none have been in sick quarters for 9 months with the exception of one officer, the Acting Bazar Master, who suffered very severely from rheumatism; but his case has been so much benefited by using the hot springs, that he has resumed his duties.

Since my arrival here, I have instituted many inquiries, with the view to obtain some information, as to the nature and physical effects of the climate upon the people themselves; the diseases to which they are liable, &c. From all I could learn, this place is esteemed by them "the healthiest spot in Scinde," and from what I have seen, their diseases appear few and simple, and, in their good opinion of the climate, I am strongly inclined to concur; for a fresh sea breeze, blows here, almost with the regularity of a trade wind, and as no deleterious exhalations arise in this part of the country, it enjoys a happy exemption from endemic disease. Judging by the past few months, I might venture to say, that out of a regiment 1000 strong; 900 could be safely calculated upon, as fit for service, at any time of the year.

THE THERMAL WELLS, are situated about 7 miles from Karrachee in an irregular chain of hills, which runs nearly East and West; the principal well is 97° 5′ there are other reservoirs cooler, and the hottest I could discover, is 120° Farenheit. The water is used by the inhabitants, both as an internal diluent, and bath; and many important medical virtues are attributed to it. I have endeavoured to ascertain, to what, besides temperature, it owes its essential properties, and refer them to uncombined acids, chiefly the muriatic. These springs would, no doubt, prove useful in the cure of chronic rheumatism, as was evinced in the instance of Captain ——, and a valuable auxiliary in cases of chronic bowel affections, syphilitic taints, and skin diseases.

At Fort Monorah about 6 miles from camp, there is an excellent beach for sea bathing; the water clear and the bottom composed of white sand. The fort stands upon a high rock jutting into the sea; the breeze is strong and refreshing. The Thermometer ranges about 5 degrees lower than in camp. I have, at different times, recommended cases of severe illness to be sent to this place, and all recovered more rapidly than I could have expected. I do not know, a more promising site for a convalescent station, for all sick sent down the river, from the upper stations; the only draw back, is, the difficulty which at present exists of getting drinking water.

The following is the native division of climate and as far as my experience extends I look upon it as correct, I have appended the means of the daily temperature, as taken by me, since I have been at Karrachee.

| *Months.* | *Weather.* | *Min.* | *Max.* |
|---|---|---|---|
| January<br>February | Cold with cloudy sky | 61 3 | 77 5 |
| March | Cold with showers of rain | 63 13 | 85 17½ |
| April<br>May | Hot, clear sky a cool breeze during the night | 69 24<br>75 5 | 88 10<br>90 15 |

| *Months.* | *Weather.* | *Min.* | *Max.* |
|---|---|---|---|
| June | Hot | 81 25 | 92 5 |
| July, August, September | Moist atmosphere cloudy and heavy showers of rain with strong and W. S. W. winds | 81 1 / 79 10 / 78 17 | 88 24 / 85 17 / 85 25 |
| October | Midday very hot | 71 .. | 87 40 |
| November | Cool | .. .. | .. .. |
| December | extremely cold | .. .. | .. .. |

I have had, but 9 months experience of Scinde, and that has been limited to Karrachee; and were I to hazard an opinion, from what I have seen of the place, and the country about it, I should say, that it gives fair promise of proving a healthy station; for at no period of the year, can the atmosphere be affected by the remote causes of endemic fevers.

CAMP NEAR KARRACHEE, 3rd November, 1839.

6.

*Notes on the climate of Panchgunnee, situated on the Eastern side of the Table land of the Mahabuleshwur Hills.*

After the establishment of the convalescent station of Malcolm Pait, it was observed, that during the monsoon, the eastern side of the table land of the Mahabuleshwur Hills, was comparatively free from the rain and fog, which are almost constantly present, during that season, at Malcolm Pait.

With the view, of observing these points of difference, and of ascertaining, whether there did not exist, on the table land,—a locality habitable at all seasons, and suitable for a cantonment for European troops, Sir John Malcolm directed, that an intelligent native should be stationed at Panchgunnee, during the monsoon of 1830.

Panchgunnee is a small village, about ten miles distant, from Malcolm Pait; it is situated on the eastern extremity of the table land, and overlooks the valley of Wye. Its elevation is estimated at 4000 feet above the level of the sea; that is, 2000 feet above the general level of the Deccan, and 500 feet below that of Malcolm Pait.

The native writer was instructed, to give his chief attention to the presence and duration of rain, fog, and sunshine; and to note daily, between 5 A. M. and 10 P. M. the number of hours, of their respective prevalence.

The following table exhibits an abstract of these observations.

| Months. | Sunshine | | Fog | | Rain | | Number of days observed. |
|---|---|---|---|---|---|---|---|
| | on days. | for hours. | on days. | for hours. | on days. | for hours. | |
| June from 24th inclusive | 5 | 15¼ | 4 | 1⅛ | 6 | 21½ | |
| July | 24 | 158½ | 13 | 16 | 27 | 100 | |
| August | 24 | 139¾ | 16 | 33⅜ | 23 | 66¾ | |
| September | 27 | 187 | 8 | 8½ | 15 | 21 | |
| October to 12th inclusive | 11 | 82½ | 1 | ¼ | 10 | 19½ | |
| Total monsoon | 91 | 575¾ | 42 | 60 | 81 | 228⅜ | 111 |

The Native writer was now carefully instructed, in the manner of observing, and registering the thermometrical indications; and with the view, of supplying data for a comparison of the temperature of Panchgunnee, with that of Malcolm Pait, during the fair season; he continued to reside at Panchgunnee from the 9th November 1830 to May 31st 1831. From the observations made during these months, the mean temperature of Panchgunnee during the fair season, was found to be 68° 1; mean maximum 75° 5; mean minimum 61° 2; mean daily variation 14° 3. In round numbers, 2 degrees of temperature higher than Malcolm Pait, and nearly, 4 degrees of greater daily variation 8 degrees of lower temperature than the Deccan, and 12 degrees less diurnal variation.

In order, that a still more accurate comparison of the monsoon season of Malcolm Pait and of Panchgunnee, might be instituted; an Assistant Apothecary was stationed at Malcolm Pait, during the monsoon of 1835, and an experienced Hospital Assistant was detached to Panchgunnee.

The Assistant at Panchgunnee, was supplied with a thermometer, and a pluviometer, similar in construction, to those with which the observations, at Malcolm Pait, were made. He was enjoined to observe, and register the temperature every 2nd hour, from sunrise to 10 P. M., and also, to note, whether there was fog, rain, or sunshine, at each period of observation. The daily and nightly rain falls, were separately registered.

The following table is an abstract of these observations, and exhibits the chief points of difference, between the climate of Malcolm Pait and Panchgunnee, during the monsoon.

| | Amount of Rain. | | | Number of days (in 106) on wh. no rain fell. | | | Greatest daily fall. | | | Mean Temperature. | | Mean daily Variation. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mahabuleshwur, Malcolm Pait. | Panchgunnee. | Bombay. | Mahabuleshwur, Malcolm Pait. | Panchgunnee. | Bombay. | Mahabuleshwur, Malcolm Pait. | Panchgunnee. | Bombay. | Mahabuleshwur, Malcolm Pait. | Panchgunnee. | Mahabuleshwur, Malcolm Pait. | Panchgunnee. |
| June (17—30) | 53.60 | 12.96 | 3.64 | .. | 2 | .. | 11.32 | 3.01 | 0.82 | 64.1 | 67.3 | 2 5 | 6.3 |
| July ..... | 43.63 | 10.78 | 4.37 | .. | 8 | 14 | 4.08 | 1.40 | 1.16 | 63.3 | 67.3 | 2.9 | 6.3 |
| August ..... | 61.62 | 13.28 | 35.76 | 5 | 13 | 8 | 6.43 | 1.20 | 6.39 | 62.8 | 67.1 | 2.3 | 6.7 |
| September... | 37.57 | 13.52 | 12.17 | 5 | 8 | 5 | 4.34 | 2.00 | 3.27 | 65.7 | 66.8 | 4.8 | 7.1 |
| | 196.42 | 50.54 | 55.84 | 10 | 31 | 27 | 11.32 | 3.01 | 3.27 | 63.9 | 67.1 | 3.1 | 6.6 |

In regard, to the prevalence of fog and rain, and the presence of sunshine, at Panchgunnee, it was noted, that of 954 observations made on the state of the fog, viz. 9 daily observations on 106 days, from sunrise to 10 P. M.; fog was found absent on 385. Of a similar number of observations, made at the same time, rain was absent, at 471 observations.

Of 552 observations made on the absence, or presence of sunshine, viz. 6 daily observations, between sunrise and sunset, for 92 days; sunshine partial or full, was present, at 297 observations.

The following table exhibits in detail, the data from which, the above abstract statement, has been made; and also shews the hours, at which, the most frequent exemption from fog, and rain, had been observed.

| | Number of days on which observations were made. | Number of days, on which, there was no fog, at the different hours of observation. | | | | | | | | | | Number of days, on which, there was no rain, at the different hours of observation. | | | | | | | | | | Number of days, on which, there was partial or full sunshine, at the different hours of observation. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 a. m. | 8 a. m. | 10 a. m. | noon. | 2 p. m. | 4 p. m. | 6 p. m. | 8 p. m. | 10 p. m. | | 6 a. m. | 8 a. m. | 10 a. m. | noon. | 2 p. m. | 4 p. m. | 6 p. m. | 8 p. m. | 10 p. m. | | 6 a. m. | 8 a. m. | 10 a. m. | noon. | 2 p. m. | 4 p. m. | 6 p. m. | 8 p. m. | 10 p. m. | |
| June ... | 14 | 4 | 4 | 9 | 6 | 10 | 4 | 2 | .. | 1 | | 3 | 5 | 9 | 8 | 9 | 4 | 2 | 1 | 1 | | not noted. | | | | | | | | | |
| July ... | 31 | 10 | 14 | 18 | 23 | 23 | 17 | 15 | 6 | 5 | | 13 | 20 | 19 | 21 | 24 | 19 | 15 | 11 | 9 | | 14 | 18 | 22 | 25 | 23 | 14 | .. | .. | .. | |
| August . | 31 | 13 | 15 | 15 | 15 | 13 | 13 | 10 | 10 | 9 | | 15 | 16 | 15 | 14 | 14 | 16 | 14 | 14 | 14 | | 15 | 16 | 15 | 15 | 17 | 14 | .. | .. | .. | |
| Septr. .. | 30 | 12 | 21 | 21 | 22 | 13 | 9 | 3 | .. | .. | | 22 | 21 | 24 | 22 | 13 | 12 | 11 | 10 | 11 | | 7 | 18 | 21 | 18 | 16 | 9 | .. | .. | .. | |
| Total .. | 106 | 39 | 54 | 63 | 66 | 59 | 43 | 30 | 16 | 15 | | 53 | 62 | 67 | 65 | 60 | 51 | 42 | 36 | 35 | | 36 | 52 | 58 | 58 | 56 | 37 | .. | .. | .. | |

C. M.
*Secy.*

## 7.

*An account of a Disease, which affects the Camels in the Province of Lus; called Photo Shootur, by the natives, and supposed by them, to have properties analogous to those of the Variolæ Vaccinæ — Extracted from* Dr. Whinchester's *report on the Topography of Tatta.*

"The following facts connected with small pox, and communicated to me by Mr. Masson, a gentleman, well known for his very persevering and highly successful antiquarian researches, in Central and Upper Asia, will, I am sure, be interesting.

"In the province of Lus along the sea-coast S. W. of Karachi, of which Beila is the capital, and Sommeanee the sea port; the milkers of Camels affirm, that they have a disease called Photo-Shootur. Small pox in Lus is designated "Photo" so that Photo Shootur "implies the small pox of the Camel, which is an eruption on the udder of that animal; not more violent than, and in its pustule, similar to that, on the udder of the Cow. The Camels, which are thus affected, continue to give milk which is largely drank by the inhabitants, but both the men and the woman who milk them, are invariably seized with a pustular disease, similar to that on the Camels udder, on their hands and arms, never extending above the elbows. No one, has ever been known, to die from this eruption, and the natives themselves remark that those who have had the Photo-shootur, are uniformly exempt from small pox, which is a disease occasionally endemic in the district.

"* Inoculation is known in Lus; the virus being taken from a person labouring with small pox, and inserted on the wrist of healthy individuals (children)

* Inoculation is also known in Cabool, there, it is generally performed by the Syuds, who frequently do so, two or three times, before it takes effect.

who, if the operation is successful, which is not always the case, are seized with small pox, not limited to the hand and arm, but general over the body: commonly mild, yet in some cases fatal.

"Although the inhabitants are aware that the Photo-shootur * is a preventive against small pox, they do not inoculate with its virus, in a manner similar to what they do, from the small pox pustule, which frequently brings on a disease, believed by these people, to be beyond the power of the Native Doctors, insomuch so, that the relatives of the sick, proceed to the shrine of some favourite saint: there, by propitiatory offerings, to invoke aid in favour of the disease."

Dr. Baron, President of the Section appointed to enquire, into the present state of vaccination, by the Provincial Medical and Surgical Association,—in forwarding to this Society, a copy of the report on vaccination, requested, that any information bearing on that subject, in possession of the Society, might be transmitted.

In compliance with this request, the above extract has been already communicated.

8.

*Case of dislocation of the lower Jaw caused by the act of vomiting. Communicated by* W. Mackie, Esq.

"Jovair Vammal, Hindoo weaver, aged about 18 years, of a spare lax habit of body; attended at the Native Dispensary on the 23rd September 1840. It was stated, that on his passage from Surat to Bombay, he was seized with severe sea sickness and while in the act of vomiting, completely dislocated his lower Jaw. In this state, 6 days after the accident, he made his appearance at the Dispensary. The dislocation was immediately reduced in the usual manner, but without noise."

9.

*Note on the catalogue of articles of the Materia Medica; by* A. Walker, *M. D.*

May not the efficacy of the Oleum Nigrum, from the seeds of the Celastrus, in Beriberi, depend, on the presence of creosote?

For Colophony, in note to p. 56, read resin of a species of Berberis; the natives think the resotta, the meconium of the Camel; it is to be found in every bazar in the Deccan.

In the article Hyperanthera Moringa for ½ ounce of oil read 6 ounces.

*Sinapis alba*, and *nigra*, are not the species of mustard, usually cultivated in the Deccan, which commonly are *sinapsis racemosa*, and another species, not yet very accurately defined.

* Mr. Masson could not recollect at what season of the year it was prevalent

# QUARTERLY PROCEEDINGS

OF THE

# MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

---

*Proceedings from May 15th, to October 1st, 1839.*

MEMBERS ELECTED.

*Corresponding.*

Dr. Pruner, Chief Physician to the Military Hospital, and Professor in the Medical College at Cairo. M. M. J. Desjardins, Secretary to the Society of Natural History in Mauritius.

*Ordinary.*

W. Hardy, Esq. Assistant Surgeon, having refused to pay his annual subscription, has ceased to be a member of the Society.

*Communications presented.*

1. Letters from Sir George Ballingall, and Sir John Webb, Director General of the Ordnance Medical Department, acknowledging the receipt of the 1st volume of the Society's Transactions.

2. A letter from the Private Secretary to the Hon'ble the Governor, acknowledging the receipt of a copy of the 1st and 2nd volumes of the Society's Transactions.

3. Letters from the Secretary to the Bombay Geographical Society, the Medical Board at Madras, and the Deputy Inspector General at Madras, acknowledging the receipt of the 2nd volume of the Society's Transactions.

4. A letter from the Superintendent of the Government printing establishment, notifying that without the renewed authority of Government, the privilege of having circulars printed at the Government Press, would not be continued.

5. A letter from W. S. Boyd, Esq. Secretary to Government, requesting that six copies of all future publications made by the Society, be supplied to Government, for transmission to the Hon'ble the Court of Directors.

6. A letter from the Secretary to Government acknowledging the receipt of six copies of the 1st and 2nd volumes of the Society's Transactions.

7. A letter from Dr. A. Gibson, forwarding a parcel of Senna seed

8. A case of Lithotomy, by W B. C. Graham, Esq

9. Notes on the treatment of Cholera with Acetate of Lead, by C. Morehead, M. D.

10. Meteorological Observations made at Belgaum, from 1st January 1833, to 1st January 1839, by J. Doig, Esq. Presented by the Medical Board.

11. Abstract of Meteorological Observations made at Ootacamund, on the Neilgherry Hills, from the 1st June 1829, to 31st May 1836 inclusive, by J. Glen, Esq.

12. A Case of Tubercular Elephantiasis by A. Young, Esq.

13. Annual report of the field detachment stationed at Karrack in the Persian Gulf, by G. H. Davis, Esq. Presented by the Medical Board.

14. Topography of Tatta in Lower Scinde; by J. W. Winchester, Esq. Presented by the Medical Board.

15. A letter from Dr. Ross, at Baghdad, reporting the very general prevalence in July last, of fevers of different types, consequent on the drying up of the marshes formed by the inundation of the Tigris and Euphrates; the waters of which rivers had risen in May and June, between three and five feet higher than their usual annual rise.

16. Register of the Pluviometer at Bombay, for the months of July and August 1839, by G. Noton, Esq.

17th. Cases of Cardiac disease, by R. H. Hunter, Esq. H. M. 2nd Regiment.

COMMITTEE OF MANAGEMENT FOR 1840.

*President.*

J. McADAM, ESQ.

*Members.*

R. H. KENNEDY, M. D. J. GLEN, ESQ.
J. BIRD, ESQ. J. McLENNAN, ESQ

*Secretary for* 1840-41.

C. MOREHEAD, M. D.

*Proceedings from October 1st 1839, to 1st January 1840.*

MEMBERS ELECTED.

*Ordinary.*

John Craig, Esq., and C. R. O. Bloxham, Esq., Assistant Surgeons, elected in accordance with Regulation 7.

*Communications Presented.*

1. A letter from Dr. Goodeve, thanking the Society for the copy of the 2d volume of the Society's Transactions presented to the Medical and Physical Society of Calcutta.

2. A letter from Dr. Pruner, Chief Physician to the Military Hospital and Professor in the Medical College at Cairo, acknowledging the receipt of the 1st and 2d volumes of the Society's Transactions

3. A letter from Dr. Gibson, forwarding a parcel of the dried leaves of a Crinum.

4. A letter from W. S. Boyd, Esq., Secretary to Government, expressing the intention of Government, to subscribe for 100 copies of each of the future annual volumes of the Society's Transactions.

5. Topography of Jerruck, by J. W. Winchester, Esq., presented by the Medical Board.

6. Medical history of Her Majesty's 2d or Queen's Royal Regiment from the 1st of April 1838 to the 31st of March 1839, by R. H. Hunter, Esq.

7. Three cases of Barbiers, by R. H. Hunter, Esq.

8. A Register of the Pluviometer at Bombay, from the year 1837 to 1839, and for July, August, and September 1839, by G. Noton, Esq.

9. Report on the diseases at Sukkur in May, June, and July 1839, by J. Don, M. D., presented by the Medical Board.

*Proceedings from the 1st January, to 31st March*, 1840.

MEMBERS ELECTED.

*Ordinary.*

J. Atkinson, Esq. Assistant Surgeon, Bombay Establishment.

J. N. Pinkerton, M. D. Assistant Surgeon, elected in accordance with Regulation 7.

*Communications presented.*

1. A letter from Monsieur L. Bouton, Secretary to the Society of Natural History at the Mauritius, acknowledging the receipt of the 2d volume of the Society's Transactions.

2. A letter from Dr. Gibson, forwarding a specimen of the oil extracted from the Celastrus paniculatus. This is the *Oleum nigrum* of Dr. Herklots, recommended for the treatment of Beriberi.

3. A letter from Dr. Gibson, forwarding a parcel of the Indian Misletoe.

4. A letter from D. C. Bell, Esq. Superintending Surgeon, forwarding a specimen of a species of Lizard called *Chundun Goo* by the natives of Guzerat, and the bite of which, is supposed by them, speedily to prove fatal.

5. A letter from A. Burn, Esq. Civil Surgeon, Kaira, placing at the disposal of the Society a register of deaths and births in the town of Kaira, from the 11th March 1837 to the 1st February 1840.

6 Annual report of the field detachment at Balmeer, for the year 1838, by S. P. Prichard, Esq. Presented by the Medical Board.

7. A dangerous case of flooding arising from adhesion of a portion of placenta, accompanied with irregular contractions of the uterus, by T. Waller, Esq.

8. A short sketch of the Medical Topography of Sukkur and of the diseases which prevailed in the brigade there, from March to December 1839, by J. Don, M. D. Presented by the Medical Board.

9. Annual report of the Sick in the hospital of the Marine Battalion N I. for 1838, by J. Burnes, Esq. K. H.

10. Annual report of the field detachment at Balmeer for 1839, by S. P. Prichard, Esq. Presented by the Medical Board.

11. Annual report of the 7th Regiment N. I. for 1839, by A. Weatherhead, M. D. Presented by the Medical Board.

12. Report on the station of Karachee, referring particularly to the months of August, September, and October 1839, by F. S. Cahill, M. D. Presented by the Medical Board.

13. Report of Diseases in the 22d Regiment Bombay N. I. stationed at Tatta and while in progress in boats up the Indus, during the months of August, September, and October 1839, by J. Inglis, Esq. Presented by the Medical Board.

14. A case of chronic pleuritis, in which the operation of paracentesis thoracis was performed, by J. Bourchier, M. D.

15. A catalogue of articles of the Materia Medica of Europe and India, found at Aurungabad and in its vicinity, by A. Walker, M. D. His Highness the Nizam's Service.

16. A case of difficult labour in which the left arm presented, and in which, turning at a late stage, was successfully had recourse to, by A. Walker, M. D., H. H. Nizam's Service.

17. Register of the Thermometer kept at Kaira, from January 1838 to January 1840, by A. Burn, M. D.

18. A map of the town and cantonment of Kaira, by A. Burn, M. D.

19. A calculus extracted from the male urethra in 1838 at Kaira, by A. Burn, M. D.

## *Proceedings from the 1st April to 31st June* 1840.

### Members Elected.

#### *Ordinary.*

J. H. Peart, Esq. Assistant Surgeon, Bombay Establishment.

#### *Communications presented.*

1. A letter from H. Hadley, Esq., Assistant Surgeon, requesting that his name be withdrawn from the list of Members.

2. A letter from the Deputy Inspector General of Her Majesty's Hospitals, at the Cape of Good Hope, acknowledging the receipt of the 2d volume of the Society's Transactions.

3. A letter from A. Gibson, Esq., describing the operation for Lithotomy as performed in his presence, by Boodun Shustr Weyd of the village of Jowla in the Deccan.

4. Annual Report of the Hospital department of the European troops of the corps d' armee of Scinde from 1st January to 31st December 3839. By R. H. Kennedy, M. D. Presented by the Medical Board.

5. Surgical cases by J. H. Peart, Esq.

6. Annual Report of the Native General Hospital for the years 1838 and 1839, presented by the Medical Board.

7. Annual Report of the 1st Regiment, Bombay European Infantry, for 1839. By A. Howison, Esq , presented by the Medical Board.

8. Report on the cases of Aden ulcers received into the Marine Battalion Hospital, Bombay, 1839. By A. Campbell, M. D.

9. Annual Report of the diseases in the Jail and Detachment Hospitals at Rutnagherry, from the 1st January to the 31st December, 1839. By J. Bourchier, M. D. presented by the Medical Board.

10. Practical observations on the pathology and treatment of tropical Dysentery, by James Bird, Esq.

11. Specimen of a Calculus extracted from the urethra by J. H. Peart, Esq.

*Proceedings from 1st July to 30th September* 1840.

MEMBERS ELECTED.

*Ordinary.*

J. Jackson, Esq. Bengal Medical Establishment and J. G. Malcolmson, Esq. lately of the Madras Medical Establishment.

R. Hoskin, Esq. J. H. Carter, Esq. T. Clark Esq. and R. Woosnam, Esq. Assistant Surgeons, elected, in accordance with Regulation 7.

*Communications presented.*

1. A letter from J. Bird, Esq. requesting that his name be withdrawn from the list of Members and from the Committee of management.

2. A letter from the Royal Medical Society, Edinburgh, thanking the Society for the copy of the Transactions, presented to them.

3. A letter from Sir A. Cooper, Bart. thanking the Society for the 2d volume of Transactions, presented to him.

4. A letter from A. Weatherhead, M. D. regarding rhe Meteorological observations made at Mhow.

5. Annual Report of the diseases of H. M. 2d or Queen's Royal Regiment from the 1st of April to the 31st March, 1840, by R. H. Hunter, Esq.

6. Extract from the Annual Statistical Report of Lower Scinde, Cutch Gundava, Sewestan, Affghanistan and Beloochistan, from 1st December 1839, to 30th May, 1840, by R. H. Hunter, Esq.

7. Register of the Pluviometer at Bombay for the months of June and July, presented by G. Noton, Esq.

8. Notes on Scurvy, as it has appeared at various times, in the Jail at Rutnagherry by J. Bourchier, M. D.

9. Case of Rheumatism by A. Duncan, Esq.

# LIST OF DONATIONS FOR THE LIBRARY.

By the Editor.

Madras Quarterly Journal, 1st vol.

By F. Corbyn, Esq.

The India Journal of Medical and Physical science, volume iii.

By Dr. Baron, Chairman of the Section.

A Report on the present state of Vaccination by the Section of Vaccination of the Provincial Medical Association.

By Government.

Two copies of the Rev. Mr. Taylor's examination, and analysis of Colonel Mackenzie's manuscript.

By H. B. E. Frere, Esq.

Two copies of a Report on Cholera Morbus, as occurring in Malta, by Guiseppee Maria Stilon, &c. &c. &c.

By Sir J. McGrigor, Director General of the Army Medical Department.

Statistical Reports on the Sickness, Mortality and Invaliding among the troops of Her Majesty's army, Parts 1st and 2nd.

By J. G. Malcolmson, Esq. Madras Medical Department.

A Pamphlet on the causes of Bronchocele in India and England, reprinted from No. xv. of the British and Foreign Medical Review.

By Dr. T. Pruner, Chief Physician to the Military Hospital and Professor in the Medical College at Cairo.

Treatise on the plague, &c.

By M. L. Bouton, Esq. Secretary to the Society of Natural History in Mauritius.

A copy of the annual Report of the Society of Natural History in Mauritius.

By Dr. Goodeve, Professor of Anatomy in the Medical College of Bengal.

A Report on the Medical College of Bengal.

# LIST OF MEMBERS

OF THE

# MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

## ORDINARY MEMBERS BOMBAY PRESIDENCY.

The asterisk (*) marks those members who are absent on furlough or sick leave.

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Arnott, F. S., M. D., *Assistant Surgeon.*
Atkinson, J. J., Esq., *Assistant Surgeon.*

Babington, W. F., Esq., *Assistant Surgeon.*
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* Burn, A., M. D., *Assistant Surgeon.*
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J. P. Jackson, Esq., *Bengal Establishment.*
H. S. Fleming Esq., *Surgeon, Madras Establishment.*

W. Middlemas, Esq., *Assistant Surgeon, Madras Establishment.*
J. Dorward, Esq., *Assistant Surgeon, Madras Establishment.*
A. Anderson, Esq., *Acting Surgeon to H. B. Majesty's Superintendent in China.*
J. G. Malcolmson, Esq., *formerly, Surgeon Madras Establishment.*

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## CORRESPONDING MEMBERS.

T. Williamson, Esq., *B. C. S.*
J. A. Dunlop, Esq., *B. C. S.*
J. S. Law, Esq., *B. C. S.*
Captain Shortrede, *Superintendent of the Trigonometrical Survey.*

Dr. Pruner, *Chief Physician to the Military Hospital and Professor in the Medical College at Cairo.*
M. M. J. Desjardins, Esq., *Secretary to the Society of Natural History in Mauritius.*

## ERRATA.

| | | | |
|---|---|---|---|
| Page | 56 | line 2 | *for* "Loyala" *read* Loyola |
| —— | 56 | — 13 | *for* "a Hindoo" *read* an Indian |
| —— | 58 | — 11 | *for* "*Ligusticuun*" *read Ligusticum* |
| —— | 59 | — 17 | Note, *for* "and" *read* ad |
| —— | 60 | — 4 | *for* "Bilerica" *read* Bellerica |
| —— | 60 | last line | Note *for* "Madr. Gateway. Journal." *read* Madr. Gateway Literary Journal |
| —— | 61 | — 12 | *for* "*Delenii*" *read Dilenii* |
| —— | 64 | — 2 | *for* "the surface, it is no, &c." *read* the surface, and it is no, &c |
| —— | 65 | — 2 | *for* "and a half" *read* quarter |
| —— | 65 | — 8 | *for* "Rumphias" *read* Rumphius |
| —— | 66 | — 20 | *for* "*Tamarix diœen*" *read Tamarix diœca* |
| —— | 66 | — 25 | transpose (W. and Arnott.) to line 26 after *Fagonia mysoriensis* |
| —— | 70 | — 30 | *for* "RUBEACEÆ" *read* RUBIACEÆ |
| —— | 70 | — 32 | *for* "cumlie" *read* cumbi |
| —— | 75 | — 8 | *for* "at Phoohnurry" *read* at Phoolmurry |
| —— | 75 | — 33 | *for* "contain" *read* contains |
| —— | 76 | — 33 | *for* "or" *read* and |
| —— | 78 | — 15 | *for* "Sellignea" *read* Selliguea |
| —— | 78 | — 2 | Addenda, *for* "*Amyris*" *read Amyris Commiphora* |
| —— | 85 | — 28 | *for* "to be" *read* from being |
| —— | 87 | — 4 | *for* "put in an" *read* put on an |
| —— | 88 | — 16 | *for* "to is production" *read* to its production |
| —— | 140 | — 16 | *for* "during dusk" *read* driving dust |
| —— | 144 | — 6 | *for* "*Meredie*" *read Meridie* |
| —— | 144 | — 23 | *for* "*Meredie*" *read Meridie* |
| —— | 149 | — 18 | *for* "Kudny" *read* "Kudury" |
| —— | 155 | — 12 | *for* "6th of September" *read* 16th of September |
| —— | 166 | — 31 | *for* "the gate" *read* the citadel gate |
| —— | 180 | — 6 & 7 | *for* "the eight days" *read* the first eight days. |

# TRANSACTIONS

OF THE

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

FOR THE YEAR M.DCCC.XLI.

BOMBAY:

PRINTED AT THE AMERICAN MISSION PRESS,

BY E. A. WEBSTER.

1841.

No. IV.

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

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*Ex-Officio.*

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AND DEPUTY INSPECTOR GENERAL OF HOSPITALS.

Committee of Management for 1841.

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*Secretary.*

C. MOREHEAD, M. D.

# CONTENTS.


ART. I. — Experiments illustrative of the Physiological effects of Calomel on the Gastro-intestinal mucous membrane of Dogs. By J. Murray, Esq. ..... 1

— II. — Report on the Diseases which have occurred in the H. C.'s Steam Flotilla on the rivers of Mesopotamia, from the 1st January, to the 31st December, 1839, with a short sketch of the Climate and Topography. By John C. Floyd, Esq. Surgeon in charge ..... 27

— III. — Report of the 1st Troop Horse Brigade, stationed at Sholapoor, Poona, and on Field Service in Scinde, for the years 1838, 1839, and 1840. By A. H. Leith, Esq. ..... 46

— IV. — Statistical Review of the Climates of the princial Stations for European Troops in the Bombay Presidency. By R. H. A. Hunter, Esq. H. M.'s 2d or Queen's Royal.... 75

— V. — On the Jungle Fever of Candeish. Extracted from the Annual Report of the 15th Regiment N. I. for the year, 1840. By A. Graham, Esq. ..... ..... 86

— VI. — Observations on the Dracunculus as it prevailed in the 22d Regiment, N. I. from April till September, 1841. By D. Grierson, Esq. ..... ..... ... 90

— VII. — Notes sur la plaie du Yemen, offrant l' analyse d' une monographie de cette Maladie. Par M. Le Lieutenant Colonel Dr. Chedufay, Medecin Inspecteur des armées d' Arabie. 94

— VIII. — Report on the Medical Statistics of Quetta. By A. H. Leith, Esq. ..... 101


## APPENDIX.


1. — Catalogue of Medicines found in the Bazaars of Hydrabad, Khyrpur and Shikarpur. By the late P. B. Lord, M. D. ..... 115

2. — General Remarks on the remedial effects of the extract of Ganja as observed at the Native General Hospital at Bombay: forwarded with two cases of Tetanus, treated in that Institution. By A. Graham, Esq. ..... 128

3. — Extract from the Annual Report of the sick in Hospital of the 10th Regiment, N. I. Stationed at Aden, for 1840. By C. Black. Esq. 133

4. — Extract from the Second half yearly Report of the Oculists Department, for 1840. By M. Stovell, Esq. ..... ... 135

5. — Case of Hydrophobia..... 136
6 — Case of extensive Tubercular deposition over the convex surface of the Brain, with softening of the left hemisphere, and slight serous effusion into the lateral Ventricles. By J. Murray, Esq..... 137
7. — Notes on the Climate, &c. of Dadur. By J. Deas, Esq..... 141
8. — Obscure Case of Phthisis Pulmonalis. By J. D. Campbell, Esq. · 144
9. — Letter on the treatment of the Aden Ulcer from Dr. Pruner, Chief Physician to the Military Hospital and Professor in the Medical College at Cairo, to the Members of the Medical Board in Bombay. 146
10. — Bombay Branch of the Royal Asiatic Society..... 147

Quarterly Proceedings of the Medical and Physical Society of Bombay.. 149
List of Donations for the Library.. . . . . 153
List of Members of the Medical and Physical Society of Bombay . . . 155

# TRANSACTIONS.

1841

# TRANSACTIONS

OF THE

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

1841.

## Article I.

## *Experiments illustrative of the Physiological effects of Calomel on the Gastro-intestinal mucous membrane of dogs.*

By J. Murray, Esquire.

Presented February, 1841.

The following experiments, which have been prosecuted at intervals of leisure during the last two years, were undertaken for the purpose of determining the physiological effects of calomel and other mercurial preparations on the alimentary canal of dogs, and of thence endeavouring to deduce their probable therapeutic operation on the human species.

I am fully sensible of the objection that may be taken to such experiments, on the ground of the possible diversity of action of medicinal agents on the lower animals, as compared with their operation on man. This objection, however, probably applies with less force to experiments on dogs than to those on any other animals. Their diet is very analagous to that of man, and the numerous experiments of Orfila appear to have established, with a very few exceptions, a similarity of effect from the administration of poisonous agents. We are probably, therefore, entitled to assume, that whatever dissimila-

rity of action may be exerted by mercurial preparations on man and on dogs, will be a difference in degree, not in kind.

There is another and a more important objection, which may be urged against the utility of these and similar experiments. I allude to the different effects on the living system of substances administered in a state of health and of disease. Hence their therapeutic qualities cannot always be correctly ascertained, though in many instances they may be safely inferred, from their physiological operation.

The considerations, which have now been stated, necessarily tend very materially to lessen the practical utility of the following experiments, and probably to render them unworthy of being submitted to the Society. But, should they serve no other useful purpose, they may perhaps be considered to possess the negative merit of testing the accuracy of some similar experiments performed by Mr. Annesley, which, having been extensively applied by their author to the treatment of Indian diseases, have probably exerted a considerable degree of influence on medical practice in this country.

The operation of mercury is stated by writers on materia medica, to be that of a general stimulant, exerting its action more especially on the glandular and absorbent systems, and promoting the secretions of the liver, bowels, skin, and salivary glands.* But, so far as I know, the direct anatomical effects of calomel on the capillary circulation of the gastro-intestinal mucous membrane had not been made the subject of experimental enquiry until Mr. Annesley instituted some experiments on dogs in 1823, from the results of which he drew the following inferences; 1st. That the natural and healthy state of the stomach and intestinal canal in dogs is that of high vascularity.—2d. That calomel, when administered in large doses, diminishes the vascularity of the mucous surface of the stomach. —3d. That it excites the arterial capillaries in the mucous coats of the colon.—4th. That it attenuates and detaches the mucous secretions from the intestinal surfaces to which they adhere.†

* Murray's Materia Medica, 3d Ed. I. 195.—Thomson's London Dispensatory, Art. Hydrargyrum.

† Annesley's Sketches of Indian Diseases, 395. 397. 400, 405.

The results of these experiments are considered by Mr Pereira,* to be so improbable, that without further evidence he refuses to admit their accuracy; while, on the other hand, they are quoted by Dr. Copland as having "determined a most important fact," and as having "explained the results of clinical observation."† From the existence of so remarkable a discrepancy of opinion on the subject between two principal authorities in therapeutics and practical medicine, the theory of the local operation of calomel may be considered as still open for further investigation.

While I append to this paper a detailed account of the experiments which I have recently instituted on this subject, in the order and form in which they were originally made and recorded, it will be sufficient to introduce here a tabular analysis of them, commencing with those intended to illustrate the natural appearance of the organs, and arranging the others according to the quantities of calomel given in each instance, but retaining the original numbers so as to admit of a ready reference to the more detailed account.‡

It will be observed that the dogs were put to death in three different ways — by hanging, drowning, and shooting in the head. The first of these modes of death, from its tendency to produce vascular congestion, would not have been resorted to, had it not been the one adopted by Mr. Annesley, the verification of whose experiments was one of the objects which I had in view. Care was taken that the dogs should not be killed during the process of digestion.

* Pereira's Lect. on Mater. Medic. Medical Gazette, xviii. 468.

† Copland's Dict. of Pract. Medicine, Art. dysentery. I. 731.

‡ I acknowledge, with pleasure, my obligations to Dr. Waller for his kind assistance in conducting several of the experiments referred to.

## A Tabular Synopsis of Fifteen Experiments on Dogs.

| Number of Experiments. | Quantity of calomel taken. | Action during life. | Mode of death. | Appearances on Dissection. | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Stomach. | Small Intestines. | Large Intestines. | Liver and Gall Bladder. | Other Organs. |
| I. | None. | | Hanging. | Pale coloured externally. Internally much corrugated, and of a pale greyish-white colour; muscular tunic considerably thicker than in the human subject. Cavity nearly empty. | Externally pale coloured. Mucous membrane pale and smooth. Canal firm and contracted. Cavity empty. | Externally pale coloured. Mucous membrane pale, throughout. Canal firm and contracted. Some dry feculence in cæcum. | Liver of deep red colour, and emitting, when incised, a considerable quantity of blood. Gall bladder distended with thin limpid bile. | Spleen of a dusky red colour, with a milky tinge, on its upper surface. |
| III. | None. | Evacuations of dark grey colour. | Hanging. | Externally pale, with a very slight rose tinge. Cavity containing some yellow adherent bilious-looking fluid; much corrugated longitudinally; mucous membrane of pale greyish colour. | Externally pale, with a very slight rose tinge. Canal firm and contracted. Duodenum containing a good deal of yellow bilious-looking fluid; mucous membrane checquered with numerous, irregular, elevated, dusky red patches. Mucus in jejunum; red patches, fewer, smaller, and less elevated than in duodenum. Ileum of greyish colour, and containing mucus. | Externally pale, with a very slight rose tinge. Canal firm and contracted Cæcum, colon and rectum, filled with thin, dark feculence, and presenting a few reddened streaks. | Liver as in Experiment i. Gall bladder distended with thin darkish coloured bile. | Spleen as in Experiment i. |
| VIII. | None. | | Drowning. | Externally of a very pale rose tint. Cavity empty. Internal surface longitudinally | Externally of a very pale rose tint. Bowel contracted and firm. In upper part of duodenum a small quantity of an orange co- | Externally of a very pale rose tint. Bowel contracted and firm. Some dark | Liver a shade lighter than in the preceding Experiments. Gall blad- | Spleen considerably enlarged and softened. |

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| | | | | corrugated, and of a pale lilac colour but white and smooth for about an inch and a half around the pylorus. | loured frothy fluid, in lower portion, it looked like thick congee of a milky colour. Mucous membrane generally pale coloured, with irregular, elevated, dusky-red patches. Mucous surface of jejunum and ileum like that of duodenum, with less marked patches. Jejunum empty. Ileum containing a little orange coloured frothy fluid. | feculence in colon: its inner surface of pale greyish colour with longitudinal corrugations less numerous and prominent than those of stomach. | der containing a little dark thin bile. | |
| XII. | Four doses of 5 grains each. | Vomited an hour after the first and third doses: several dark evacuations. | Shooting in the head. | Externally of a pale pinkish colour, containing half an ounce of orange-coloured frothy fluid. Inner surface longitudinally and densely corrugated. Capillaries of the projecting convex border of corrugations minutely injected: remaining portion of a pale lilac colour. | Externally of a pale pinkish colour. Duodenum containing a viscid dark orange coloured frothy fluid. Inner surface presenting here and there dusky-red streaks of what appeared a sanguinolent extravasation, beneath which membrane pale. Mucous membrane of jejunum of a pale greyish colour, with a few capilliform streaks. Ileum of a greyish colour with a few injected streaks, and a slight sanguineous exudation. A small quantity of dark-green frothy fluid in upper part. | Externally of a pale pinkish colour. Inner surface longitudinally corrugated and minutely injected. | Liver of a deep mahogany colour and not bleeding on incision. Gall bladder filled with very dark green liquid bile. | Spleen of usual appearance. Large vessels of mesentery much injected. |
| XIII. | Four doses of 5 grains each. | Vomited an hour after the last dose. One dark dejection. | Shooting in the head | Externally greyish-white with a slight pink hue, containing a pale drab coloured, viscid, muciform fluid. Its mucous membrane presenting a pale grey blanched appearance. | Externally greyish white, with a slight pink hue. Upper portion of duodenum containing a little of the same fluid as in the stomach, with a very slight admixture of bile; lower portion containing an ash-coloured viscid fluid. Inner surface of duodenum and jejunum pale grey. That of ileum generally pale, with numerous small detached patches of effused blood in upper portion. | Externally greyish white, with a slight pink hue, containing a fluid similar to that in duodenum. Mucous surface pale and longitudinally corrugated. | Liver of a light mahogany colour, and giving out liquid blood, on incision. Gall bladder filled with liquid dark-green bile. | Spleen of usual appearance. |

| Number of Experiment. | Quantity of calomel taken. | Action during life. | Mode of death. | Appearances on Dissection. | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Stomach. | Small Intestines. | Large Intestines. | Liver and Gall Bladder. | Other organs. |
| XIV. | Four doses of 10grains each | Once purged | Shooting in thehead | Externally greyish-white with a faint red tinge. Containing some half digested rice. Inner surface longitudinally and densely corrugated, and of a pale lilac colour. | Externally greyish white, with here and there a faint red tinge. Duodenum containing a little orange-coloured frothy fluid: its mucous surface of a greyish white colour. Jejunum of the same colour, with here and there a little sanguineous extravasation on its inner surface. Ileum containing thin half digested feculence: its mucous membrane of a faint rose tint. | Externally greyish white, with a faint red tinge. Colon longitudinally corrugated. The upper portion of its mucous membrance presenting a large patch of dotted bright red appearance: the lower portions greyish-white. Thin feculence in cæcum and rectum. | Liver of a deep mahogany colour, and emitting a small quantity of blood on incision. Gall bladder containing dark liquid bile. | Spleen of natural appearance. Mesenteric trunks injected. Bladder contracted & empty; its mucous membrane of a faint rose tinge. |
| X | Three doses of 15 grains Pil. Hydr. each. | Dark coloured dejections. | Drowning. | Capillary injection of external surface, containing a little soup. Internal surface longitudinally corrugated, and of a pale lilac colour, assuming a pinkish hue on washing and exposure to the air. | Capillary injection of external surface. Canal firm and contracted. Duodenum containing an orange coloured, slightly frothy gelatinous fluid. Internal surface presenting a uniform fleshy granular like appearance, resembling a raw excoriated surface. Over the lower two thirds, six or eight circular patches, of the size of a sixpence, with raised borders, and their inner area on the same level with the surrounding surface. In jejunum and ileum irregular fleshy patches; rest of the surface pale and smooth. | Capillary injection of external surface. Canal firm and contracted, containing a little dark soft feculence. Inner surface of colon irregularly and closely corrugated and of a uniform bright red colour. | Liver of the same colour and appearance as before. Gall bladder distended with dark bile. | Spleen of the same appearance as before. Capillary injection of the omentum and mesentery. Urinary bladder much distended; and the capillaries of its mucous membrane minutely injected. |

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| V. | *Three doses of one scruple each.* | | *Hanging.* | Externally pale coloured, with faint reddish tinge, containing undigested rice. Inner surface corrugated, and of a uniform bright red tinge as in Experiment ii. | Externally pale, with a faint reddish tinge. Canal firm and contracted. Duodenum empty: its mucous membrane of greyish colour, with numerous irregular, elevated, dusky-red patches. Similar but paler, patches in jejunum, which contained yellow bile. Still fewer, smaller, and less deeply coloured patches in Ileum. | Externally pale with a faint reddish tinge. Canal firm and contracted. Cæcum and colon full of thin greenish feculence. Inner surface of light greyish colour with a very faint reddish tinge and corrugated longitudinally. | Liver as described in Experiment i. | Spleen as described in Experiment i. |
| XI. | Three doses of two drachms each. | Greenish and dark dejection. Vomiting half an hour after each dose. | Drowning. | Externallyvery slightly injected. Containing 2 spoonfuls of dark forthy fluid. Innersurfacecorrugated longitudnally, and of a deep red colour, particularly on projecting borders of corrugations, which appeared as if dipt in blood. | Externally pale. Bowel contracted, particularly jejunum and ileum. Duodenum containing orange-coloured fluid. Inner surface presenting streaks, and irregular patches, of a deep red colour, apparently caused by a sanguiform effusion, beneath which the membrane pale, thin, and entire. Inner surface of jejunum and ileum pale generally, with smallpatches smeared with a grumous effusion, the corresponding portions of peritoneal coat livid. | Externally pale. Bowel contracted. Inner surface of colon longitudinally and thinly corrugated, of a deep red colour, with a smearing of effused blood on projecting borders of corrugations. | Liver of usual appearance Gall bladder distended with unusually dark bile. | Spleen of usual appearance, considerable injection particularly of the larger vessels, of omentum and mesentery. |
| II. | Two doses of one drachm each. | Dark coloured liquid motions: vomiting. | Hanging. | Externally of a reddish tinge, without much injection of the large vessels. Cavity containing a good deal of yellow frothy bilious looking matter, mixed with some transparentgelatinous substance. Internal surface much corrugated longitudinally, and of a uniform bright-red tinge. | Externally of a reddish tinge without much injection of the large vessels. Canal firm and contracted. Duodenum containing a great quantity of dark-bile. Inner surface of a red tinge, with raised patches of a darker red, which proved to be a sanguineous or sanious effusion beneath which the membrane was entire but reddened. Less corrugated than stomach. Ileum empty, more corrugated and less reddened than duodenum and jejunum. | Externally of a reddish tinge, without much injection of the larger vessels. Bowel firm and contracted. Cæcum and colon slightly corrugated internally and of an intensely red colour, with patches of red sanious secretion as in duodenum. Rectum of a less bright red colour. No feculence. | Liver of a deep red colour, and giving out, when cut, a considerable quantity of liquid blood. Gall bladder distended with thickish blackish coloured bile. | Spleen of a dusky red colour. |

| Number of Experiments | Quantity of calomel given. | Action during life. | Mode of death. | Appearances on Dissection. | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Stomach. | Small Intestines. | Large Intestines. | Liver and Gall Bladder. | Other organs. |
| IV. | One drachm. | Evacuations dark coloured, but more consistent than in Experiment ii. | Hanging. | Externally of a reddish tinge, containing a little unadherent bile; much corrugated longitudinally, and mucous membrane of a uniform intensely red colour, particularly on the projecting part of the corrugations. | Externally reddened (without injection of the large vessels) firm, and contracted. Duodenum containing a little bile, and presenting the same redness and patches of sanguineous extravasation on the mucous surface, as in Experiment ii. Jejunum and ileum slightly reddened. | Externally reddened (without injection of the large vessels) firm and contracted. Mucous membrane of colon reddened, but less so than in Experiment ii A good deal of thin dark feculence in cæcum and colon. | Liver of dark red colour, and not emitting so much blood as in Experiment i, ii, and iii, Gall bladder distended with thin darkish bile. | Spleen of a dusky red colour. |
| VII. | Two doses of one drachm each. | Several thin motions the first yellowish the other dark. First dose rejected. Retention of the 2nd dose doubtful. | Drowning. | External appearance as in Experiment vi. containing a small quantity of thin pale, orange coloured frothy fluid. Mucous membrane of a pale grey colour. | External appearance as in experiment vi. Duodenum lined with a whitish adhesive fluid. Inner surface of the whole of the small intestines presenting several elevated, irregular dusky-red patches, not removable with handle of scalpel, the rest of the surface of a greyish pale red colour. | External appearance as in Experiment vi. Empty longitudinally corrugated. Mucous surface of the same colour as the stomach. | Liver as in Experiment vi. Gall bladder partialy distended with very dark-coloured bile. Ductus choledochus permeable. | Spleen as in Experiment vi. |
| XV. | Three doses of one drachm each. | Vomited repeatedly after each dose. Several times purged after first dose. | Shooting in the head. | Minute ramiform injection of the peritoneal coat, containing about an ounce of orange coloured, frothy fluid. Internal surface longitudinally corrugated, and of | Externally of reddish-white colour, firm and contracted. A small quantity of orange frothy fluid in upper part of duodenum; mucous membrane injected in streaks, and presenting several bleeding points. Remainder of duodenum and | Externally of a reddish white colour, firm and contracted. Cæcum containing a muco-serous fluid, and minutely and vividly injected. Colon | Liver of mahogany colour, soft consistence and bleeding freely on incision. Gall bladder filled with dark liquid bile. | Increased vascularity both of capillary and large vessels of the omentum, mesenteric trunks injected. Kidneys emitting an unusually large quan- |

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| | | | | *a uniform bright red tint, with a few bleeding points on the projecting borders of corrugations.* | *the jejunum coated with very viscid congee-like mucous beneath which the mucous surface presented irregular, elevated dusky-red patches, with here and there small patches of extravasated florid blood. Ileum containing muco-sanguineous fluid, with capillary injection of part of its surface.* | *denselycorrugated, longitudinally in the upper portion, and transversely in the lower. Whole of its inner surface of a uniform andintensely red colour. A little muco-serous fluid in rectum.* | | *tity of blood on incision. Bladder empty and contracted; uniform bright capillary injection of its mucous membrane.* |
| VI. | Two doses of two drachms each. | Dejections dark coloured. Salivated (first dose rejected.) | Drowning | Externally of a pale rose colour, containing about 3 oz. of dark yellowish green frothy fluid. Inner surface presenting longitudinal corrugations, the raised surfaces of which had a bright red injected appearance. Surface between the corrugations of a palish lilac grey, and here and there having a granulated appearance. | Externally of a pale rose colour. Bowel firm and contracted. Duodenum lined with a slightly tenacious deep orange coloured frothy matter. The inner surface presented an irregular elevated reddened appearance, partly caused by a sanguineous or sanious secretion, beneath which the membrane appeared entire and of a pale rose-tinge. In the ileum the fluid was less abundant, darker coloured and *more consistent*. Surface of jejunum and ileum less reddened than duodenum. | Externally of a pale rose colour. Bowel firm and contracted. Colon irregularly corrugated, and containing a small quantity of the same dark coloured fluid as in the ileum. Mucous membrane injected, but less so than the *stomach*. | Liver of a dark mahogany colour, and omitting, when cut a small quantity of liquid blood. Gall bladder partly distended with dark greenish blackbile. | Spleen of a bluish red colour. |
| IX. | Two doses of two drachms each. | Loose dark evacuations with slime and a little blood. | Drowning | Externally of a pale pink colour, containing a considerable quantity of frothy orange coloured fluid. Corrugated longitudinally. Mucous membrane of central portion presenting a bright injected appearance, particularly on convex surface ofcorrugations, which looked as if blood had been effused on them: rest of the membrane had a rose tint. | Externally of a pale pink colour. Upper portion of duodenum containing an orange coloured fluid, in middle portion a muddy serous-like fluid with coagulated flakes; and lower portion coated with a sanguineous or sanious fluid, beneath which the membrane was pale and entire. On inner surface numerous dusky elevated patches. Jejunum empty and pale Ileum lined, successively, with a sanguineous, sanious, and grumous fluid. | Externally of a pale pink colour. On inner surface of colon, longitudinal, sharpened corrugations the convex surface of which was slightly injected. | Liver of the same colour, consistence and size as in former experiments. Gall-bladder very much distended with dark bile: ductuscholedochus quite permeable. | Spleen of the same colour, and size as in former experiments. |

The following conclusions appear to be deducible from the preceding series of experiments.

1st. When administered to dogs in doses of from five to thirty grains, calomel occasions, in a less or greater degree, a preter-natural afflux of blood to the minute arteries and capillaries of the gastro-intestinal (more particularly the gastric and colic) mucous membrane, imparting to that tissue a capilliform, punctiform, or uniform red tinge. This increased vascularity, which is slightly marked after doses of five and ten grains (Experiments xii, xiii, and xiv,) becomes more perceptible in doses of twenty and thirty grains, and is accompanied with more or less sanguineous effusion on the mucous surface, either in dots (like bleeding points) or in small streaks or patches (Experiments v, xi.)

2d. In the abovementioned doses it increases the flow of bile into the duodenum; and

3d. It increases the secretion from the intestinal mucous follicles and serous exhalants.

4th. When administered in doses of one, two, and three drams, it produces, in addition to a greater amount of the preceding effects, capilliform injection of the peritoneal coat of the stomach and bowels, and alters, as well as increases, their internal secretions, occasioning a sanguineous, or dark grumous, or sanious, or sero-albuminous effusion on the inner surface of the bowels, particularly of the colon. (Experiments ii, iv, vii, xv, vi, ix.) In one experiment (ix) all these different kinds of secretion (resembling the appearances in acute dysentery) were found in the small intestines of the same dog, and must have been of recent formation, as they had not passed into the colon. Under the influence of these doses, also, bile flows into the cavity of the stomach.

These results appear to me conclusively to establish, that calomel excites and increases (and, under certain circumstances, modifies) the physiological actions of the minute arteries, capillaries, and secretory vessels of the gastro-enteric mucous membrane; and that these effects are in some degree proportioned to the largeness of the dose administered.

The apparent discrepancy between the results of these experiments and those obtained on a more limited scale by Mr. Annesley in regard to the stimulant or sedative action of calomel on the capillary blood vessels of the gastric mucous membrane (for there is an exact correspondence of result regarding its action on the colon) appears to

be partly attributable to that author's having inferred, from two experiments, that the natural and healthy state of the stomach and bowels is that of high vascularity — an opinion which is opposed, I believe, to that of almost all anatomists, and is directly at variance with Experiments i, iii, and viii. The discrepancy in reference to its operation on the intestinal mucous secretion is perhaps more a difference of interpretation than any real discrepancy of results— Mr. Annesley having attributed to calomel the property of chemically dissolving and detaching the mucus from the surface to which it adheres, while I have seen reason to believe that it stimulates the mucous and serous exhalants to a preter-natural increase of their secretion, which combines with, and dilutes, the inspissated mucus previously lodged in the bowels.

I will not venture to draw any therapeutic deductions from these experiments further than to express my belief that they will be found not opposed to clinical observations. Admitting the direct stimulant or irritant operation of calomel on the healthy gastro-enteric mucous capillaries to have been established, it by no means follows that this remedy should not exert an antiphlogistic or contra-stimulant action on these vessels when preternaturally dilated and distended by disease. On the contrary, such a therepeutic effect would be accordant with the analogous operation of other remedies,* and would admit of a satisfactory explanation. To say nothing of the indirect antiphlogistic effect resulting from an increase of the different abdominal secretions, calomel may be supposed to aid in re-establishing the healthy contractility of the distended capillaries, whereby their diameters will be lessened and their morbid vascularity reduced — an effect which will be greatly facilitated by combination with such remedies as directly allay the nervous irritability of the affected tissues.

If it be asked what practical benefit can result from the discussion of the theory of the direct and primary operation of calomel, provided its ultimate agency in subduing inflammatory action in the mucous membrane of the stomach and bowels be admitted — it may be answered, that, as mercury sometimes removes, sometimes aggravates,

* An analogous action may be traced in tartar emetic, which (as is well known) has a powerful effect in controlling pulmonary inflammation, and yet, when given in poisonous doses, has been found by Magendie to produce, generally inflammation, and sometimes even hepatization, of the lungs. Christison on poisons. 2d Ed. 18. The effect of disease in modifying the action of other medicines is well known

these morbid affections, a knowledge of its mode of operation might enable us to reconcile these discrepancies, and thus give greater precision to its administration. A single illustration will shew its bearing on medical practice.

If calomel in large doses (as contended for by Mr. Annesley) possess a direct sedative effect on the gastric capillaries, or if (in the words of Dr. Copland*) it directly "diminishes vascular action in the villous coat of the stomach," it follows, that, in all cases of inflammation, or of simple increased vascular action, in that tissue, large doses of this medicine must always be productive of more or less benefit, and cannot possibly be prejudicial: —but if, on the other hand, its physiological effect be to excite or increase arterial and capillary action, it is probable that the more acute forms, or the earlier stages, of the affections referred to, would be aggravated, rather than benefited, by large doses of calomel, until the gastric capillaries should be previously depleted, and perhaps their increased action in some measure subdued.† With these few observations I dismiss the subject in the hope that it may engage the attention of other members of the Society, possessing better opportunities and qualifications for carrying it out. The subject is one of high importance to practical medicine; and its further prosecution might, at the same time, tend to throw some light on the obscure and disputed subject of the theory of inflammation. The few and imperfect experiments now submitted to the society, in conjunction with clinical experience, tend to favour the doctrine recently advocated by Dr. Carswell, that inflammation presents two successive stages, each of which is referrible to opposite conditions of the physiological properties of the affected tissue.‡

It need scarcely be added, in conclusion, that these experiments are not calculated to throw any light on the remote agency of mercury in controlling disease in organs and tissues with which it does not come into immediate contact.

* Copland's Dict. of Pract. Med. ii. 337.

† It is worthy of notice that Mr. Annesley administers large doses of calomel with equal freedom in inflammatory affections of the stomach and of the colon; although he labours to prove that it *increases* vascular action in the *former*, and *diminishes* vascular action in the *latter*, organ.

‡ Carswell's Illustrations of the elementary forms of disease. Fasc xii.

DETAILED STATEMENT OF THE EXPERIMENTS MADE WITH CALOMEL.

I. — On the 25th December 1837, a healthy looking dog, that had been confined for two days and fed on weak broth was hanged, and opened by me a quarter of an hour after. No broth was given after the morning of the 24th.

Liver of deep red colour, and emitting, when incised, a considerable quantity of liquid blood. Gall bladder distended with thin limpid bile. Spleen of a dusky-red colour, with a milky tinge on its upper surface. Stomach and bowels pale coloured, externally: the latter contracted and having a firm thickened feel throughout. On opening the stomach it was found nearly empty, very much corrugated, and of a pale greyish colour, and its muscular tunic considerably thicker than in the human subject. Small intestines empty, with the exception of some small tape worms; mucous membrane pale and smooth. Some dry feculence in the cæcum: mucous membrane of the colon pale throughout.

*Remarks.*—Mr. Annesley states, as the result of two experiments, that "the natural and healthy state of the stomach and intestinal canal is high vascularity."* In the dog which formed the subject of the above experiment, the mucous membrane throughout the whole of the alimentary canal was of a pale greyish white colour.

II. — On the 23d December 1837, at 11 o'clock A. M. I gave a healthy looking dog 3i. of calomel in the form of pill. About an hour and a half after, he vomited what appeared to be the calomel; and in the course of the day had two motions of natural appearance. Had no food. On the following day at 11 A. M. I gave another pill containing the same quantity of calomel. Did not vomit, and had two or three dark coloured and more liquid motions. Gave some broth in the evening.

On the 25th December at 11 A. M. (forty-eight hours after taking the first dose, which appeared to be rejected, and twenty-four hours after the second.) I had the dog hanged, and examined him a quarter of an hour afterwards.

Liver of deep-red colour, and giving out, when cut into, a considerable quantity of liquid blood. Gall bladder distended with a thickish blackish-coloured bile. Spleen of a dusky red colour. Stomach and bowels presenting externally a reddish tinge, without much injection of the large vessels. Bowels firm and contracted throughout their course. Stomach contained a good deal of yellow frothy bilious-looking matter, firmly adherent to the upper surface, mixed with some transparent gelatinous substance. Muscular coat thick as in the former experiment; internal surface much corrugated longitudinally; and the mucous membrane (particularly the central and pyloric portion) of a uniform bright red tinge. Duodenum less corrugated, containing a great quantity of dark bile, and its mucous membrane of red tinge, with here and there raised patches of a darker red, which had a granular appearance when first seen, but which proved to be a sanguineous or rather a sanious secretion

* Sketches of diseases of India, page 397

which was easily scraped off with the back of the scalpel, leaving the membrane entire but reddened underneath. Ileum containing two or three small tape worms, but otherwise empty, more corrugated and less reddened in colour than the duodenum and jejunum. Cæcum and colon slightly corrugated internally, and of intensely red colour, with patches of the same red sanious secretion, as observed in the duodenum. Rectum of a less bright red colour. No feculence in any part of the canal.

*Remarks.* — Mr. Annesley, from four experiments, draws the conclusion, that "the first effect of calomel, in large doses, is to diminish vascularity" — that "its operation is directly the reverse of inflammatory."* A very different result is shewn in the foregoing experiment. The whole internal surface both of the stomach, and of the small and large intestines, was in a state of remarkable vascularity: while the sanious secretion on the surface of the duodenum and colon, and indeed the whole appearance of the large bowel, exactly resembled what we observe in acute dysentery. The increased flow of bile into the stomach and duodenum is worthy of remark. That its presence was not the cause of the morbid vascularity may be inferred from the fact, that the greatest degree of vascularity was in the colon, which contained no bile.

III. — On the 29th December, 1837, a healthy looking dog that had been confined for two days, and fed on broth, was hanged and opened half an hour after. Orders were given that no food should be given after the evening of the 28th: but there is reason to think that food was given subsequently with the view of putting a stop to its howling. Motions of dark grey colour. Liver and spleen as in Experiment i. Gall bladder distended with thin darkish-coloured bile. Stomach and bowels externally pale, with a very slight rose tinge. Bowels firm and contracted. The stomach contained some yellow bilious-looking fluid, which adhered tenaciously to the lining membrane. It was much corrugated longitudinally: and mucous membrane of pale greyish colour. Duodenum contained a good deal of what appeared to be yellow bile: its mucous membrane chequered throughout with numerous dusky red patches of irregular figure, sensibly elevated above the surrounding surface, and giving it a rugous appearance. Viscid mucus in the jejunum, the lining membrane of which presented a few patches, smaller and less elevated than in the duodenum. Ileum of greyish colour, and containing viscid mucus. Cæcum, colon and rectum, filled with thin dark feculence, and presenting a few reddened streaks.

*Remarks.* — The stomach presented the same appearance as in Experiment i. excepting that it contained strongly adherent bile. The rugous appearance of the duodenum and jejunum was not remarked in the former experiment.

* Loc. Cit. 395, 397.

VI. — On the 28th December 1837, at 11 o'clock A. M. I gave to a healthy looking dog (which had been confined for a day) ℈i. of calomel in pill. Gave a little broth in the evening. Bowels were twice opened. Motions dark coloured, but more consistent than in Experiments vii. On the 29th December at 11 A. M. (twenty-four hours after taking the calomel) the dog was hanged, and opened half an hour after.

Liver of dark red colour, and not emitting so much blood on incision, as in Experiments i, ii, and iii. Gall bladder distended with thin darkish bile. Spleen of dusky red colour. Stomach externally presenting a reddish tinge. Bowels reddened (without injection of the large vessels) firm, and contracted. Stomach containing a little unadherent bile, and much corrugated longitudinally : and mucous membrane of a uniform intensely red colour, particularly on the projecting part of the corrugations. Duodenum containing a little bile, and presenting the same reddened appearance, and patches of sanguineous secretion, described in Experiment ii. Jejunum and ileum containing tape worms, and slightly reddened. Mucous membrane of the colon, though reddened, much less so than Experiment ii. A good deal of thin dark feculence in the cæcum and colon.

*Remarks.* — In this experiment the mucous membrane of the stomach was of a more intensely red colour than in Experiment ii, but there was much less reddening of the colon. The calomel acted less on the bowels (the motions being more consistent) than in the former experiment.

V. —On the 12th January 1838, at 11 A. M. I gave a dog ℈i. of calomel in pill, which was repeated, at the same hour, on the 13th and 14th, and he was killed by hanging at 11 A. M. on the 15th. Body examined half an hour after. Some soup given on the evening of the 12th and 13th.

Liver and spleen, as described in Experiment i. Bowels firm and contracted, and (together with the stomach) pale coloured, with a faint reddish tinge. Stomach containing a quantity of undigested rice; its inner surface corrugated, and of a uniform bright red tinge, as in Experiment ii. Duodenum empty, its inner membrane of a greyish colour, with numerous irregular, dusky red patches raised above the surrounding surface. Patches of similar size, but of a paler colour, in the jejunum, which contained a good deal of yellow bile. A very few, smaller, and less deeply coloured, patches in the ileum. Cæcum and colon full of thin greenish coloured feculence, its inner surface of light greyish colour, with a very faint reddish tinge, and corrugated longitudinally.

*Remarks.* — The stomach in this experiment, presented the same appearance as in Experiment ii. and iv. The small intestines presented similar patches to those described in Experiments iii. and the appearance of the colon was also similar, with the addition of longitudinal corrugations.

VI.—On the 16th January 1839, at 11 A. M. I gave to a healthy looking dog (which had been kept from food during the preceding night) ℥ii. of calomel in a little moistened bread, which it rejected in about half an hour. On the 17th at 11 A. M. repeated the above dose, which was retained. 18th had one dark coloured motion. Yesterday and to-day gave it a small quantity of weak broth. 19th It appeared to be salivated, there being a good deal of salival discharge from the mouth. At 11 A. M. (forty-eight hours after the second dose of calomel) it was killed by drowning, and inspected half an hour after.

Liver of a dark mahogany colour, and emitted, when incised, a small quantity of liquid blood : spleen of a bluish red colour, stomach and bowels of pale rose colour externally; the latter firm and contracted. Stomach somewhat distended, and containing about three ounces of a dark yellowish green frothy fluid. Muscular coat thick. The internal surface of the stomach presenting longitudinal corrugations, the raised surface of which had a bright red injected appearance, more especially in the central portion of the stomach, the surface between the corrugations of a palish lilac-grey, and here and there having a granulated appearance. Mucous membrane, within an inch and a half of the pyloric orifice, smooth and but very slightly injected.

Duodenum lined with a slightly tenacious deep orange coloured frothy (bilious looking) matter, on wiping off which, the inner surface of the bowel presented an irregularly elevated reddened appearance, part of which appeared to be caused by a sanguineous or sanious looking fluid, which could be scraped off by the handle of the scalpel, leaving the mucous membrane underneath entire and of a very pale rose tinge. Jejunum was filled with same kind of fluid, but thinner and less adhesive, and of lighter colour. In the ileum the fluid was less abundant, darker coloured, and more consistent. The surface of the jejunum and ileum less reddened in appearance than the duodenum. The colon irregularly corrugated internally, and containing a small quantity of the same dark coloured matter as in the ileum. Its mucous membrane injected, but in a less degree than that of the stomach. Gall bladder partly distended with dark greenish black bile.

*Remarks.* — We observe here the injected state of the mucous membrane of the stomach, as in Experiments ii, iv, and v. the sanguineous or sanious looking secretion on the surface of the small intestines, as in Experiments ii, and iv,—and the mucous membrane of the colon injected, as in Experiments ii, and iv.

VII. — On the 17th January 1839, at 11 A. M. I gave a healthy dog (which had been kept fasting during the preceding night) ℥i. of calomel in moistened bread, which it rejected ten minutes after swallowing it. 18th at 11 A. M. I repeated the same dose, it passed several thin motions during the day the first yellowish, the others dark coloured. Gave it a little weak broth in the evening. 20th at 11 A. M. (twenty-four hours after last dose) it was drowned and examined half an hour after.

Liver, spleen, stomach, and intestine, presenting the same appearance externally as in Experiment vi. Stomach contained a small quantity of thin pale orange coloured frothy fluid. Mucous membrane of a pale grey colour. Gall

bladder partially distended with a very dark coloured bile, which could be easily pressed through the ductus communis choledochus into the duodenum. The duodenum lined with a whitish adhesive fluid. The inner surface of the whole of the small intestines, presenting several elevated, irregular, dusky red patches, not removable with the handle of the scalpel; all the rest of the surface having a greyish pale red appearance. The mucous coat of the cæcum and colon of the same appearance as the stomach, with longitudinal corrugations, and empty.

*Remarks.* — This dog unfortunately was not watched, it is uncertain, therefore whether the second dose was retained or rejected; and consequently no safe conclusions can be drawn from the appearance. The mucous membrane of the stomach, and colon was of pale grey colour; and the small intestines presented the irregular, elevated, dusky red patches, remarked in almost all the preceding experiments.

VIII. — On the 26th January 1839, at 1 A. M. a healthy looking dog was drowned, after having been fed lightly for two days on broth. The body was examined immediately after.

Liver of healthy appearance, though its colour was a shade lighter than in the former experiments. Gall bladder containing a little dark thin bile. Spleen considerably enlarged and softened, so as to break down when pressed between the fingers. Stomach and bowels externally of a very pale rose tint, the latter contracted and firm. Stomach empty. Its internal surface longitudinally corrugated, and of a pale lilac colour, but white and smooth for about an inch and half around the pylorus. In the upper part of the duodenum was found a small quantity of an orange coloured frothy fluid, which towards the lower portion of this intestine assumed the appearance of thick congee, of a milky whitish colour. Mucous membrane of the duodenum generally pale coloured, but presenting in some parts irregular elevated dusky red granular patches, giving these portions of the bowel somewhat of a fleshy appearance. The mucous surface of the jejunum and ileum presenting the same appearance as that of the duodenum, except that the elevated patches were less marked. Jejunum empty, ileum containing a little orange coloured frothy fluid. Some dark feculence in the colon, the inner surface of which was of pale greyish colour, with longitudinal corrugations less numerous and prominent than those of the stomach.

*Remarks.* — Here we have 1st, The stomach longitudinally corrugated, and of a pale lilac colour. 2dly. The inner surface of the small intestines uncorrugated, and of a greyish white colour, with irregular, dusky red patches, very sensibly elevated above the surrounding surface, and giving a fleshy appearance to the portions of intestines thus affected. These patches were more numerous and better marked in the duodenum than in the jejunum and ileum. 3d. The mucous surface of the colon of a pale greyish colour, and pre-

senting longitudinal corrugations, which were smaller and more apart from each other than those of the stomach.

From Experiments i, ii, and iii, we may infer that the natural and healthy colour of the gastro-intestinal mucous membrane is greyish-white, with occasionally a faint lilac tinge on the gastric mucous surface. The corrugations of the stomach are numerous and disposed longitudinally: those of the colon and rectum are also longitudinal, but fewer in number, shapes, and less prominent. The inner surface of the duodenum (and more rarely, and in a much less marked degree of the jejunum and ileum) occasionally presents irregular dusky red, elevated patches or streaks, giving it a rugous appearance, the intervening portions being of the usual colour and consistence.

IX. — On the 24th January, at 11 A. M. gave a healthy dog 3iii. of calomel in soaked bread. Was sick about an hour after, and vomited what appeared to be a portion or the whole of the calomel. In the course of the evening had two or three loose dark evacuations intermixed with slime, and in one dejection there was a little bloody mucus. A little broth given. On the 25th, at the same hour, a similar dose of calomel was given in the same way. He vomited about a quarter of an hour after, a thin fluid apparently containing some of the calomel. In the course of the day had three or four dejections of the same colour and appearance, as on the preceding day. On the 26th at 1 P. M. the dog was killed by drowning, and inspected immediately after.

Liver and spleen of the usual colour, consistence, and size. Gall bladder very much distended with dark bile, and the ductus choledochus quite permeable, — stomach and bowels externally of a pale pink colour. Stomach contained a considerable quantity of frothy orange-coloured fluid: its inner surface corrugated longitudinally. The mucous membrane of the central portion of the stomach presented a bright injected appearance, more particularly on the convex surface of the corrugations, a few of which looked as if blood had been effused on them: — the rest of the surface had a rose tint. The upper portion of the duodenum contained an orange coloured frothy fluid — in the middle portion was found a considerable quantity of a muddy serous-like fluid (containing some coagulated flakes) which flowed readily from the intestine — and the lower portion was coated with a sanguineous or sanious looking matter, which could be readily wiped off by the handle of the scalpel, leaving the mucous membrane underneath entire and of a pale colour. The inner surface of the whole of the duodenum presented here and there the dusky elevated patches so frequently described. Jejunum empty and pale. The ileum lined with a fluid, which assumed successively a sanguineous, sanious, and grumous appearance. The colon longitudinally corrugated — the corrugations sharpened, and slightly injected on their convex surface.

*Remarks.* — The following points are deserving of notice in this experiment. 1st. The large quantity of bile in the gall bladder, and of bilious-looking fluid in the stomach, and upper part of duodenum.

2d. The injected appearance of the inner surface of the central portion of the stomach, (as in Experiments ii, iv, v, and vi,) more particularly on the convex surface of the corrugations, a few of which looked as if blood had been effused from them. 3d. The contents of the small intestines. These presented successively the appearance of a muddy serous-like fluid, which flowed readily from the bowel — of pure blood — of a sanious looking matter — and of dark grumous blood. In short they resembled the contents of an unhealthy abscess. Similar appearances were observed in Experiments ii, and iv, but by no means so strongly marked. In fact, the contents of the small intestines, in the present experiment, exactly resembled the alvine dejections observed in the worst forms of dysentery. To what are we to attribute them? They were evidently of recent origin, for they had not found their way into the colon: and must, therefore have been the stimulant effect of the calomel on the secretory vessels of the intestinal mucous membrane. 4th. The corrugations of the colon injected in a less degree than those of the stomach.

X. — On the forenoon of the 1st February, 1839, gave a healthy dog (that had been confined from the preceding evening without food) fifteen grains of pilulæ Hydrargyri, and repeated the same quantity on the 2d and 3d. He was fed with boiled rice on the evening of the 1st and 2d, and had several dark coloured dejections. Was killed by drowning on the forenoon of the 4th and examined immediately after.

Liver and spleen of the usual colour and appearance. Gall bladder distended with dark bile. Injection of the capillaries of the omentum and *mesentery*, and of the external surface of the stomach and intestines. The *latter firm* and contracted. The internal surface of the stomach (which contained a little soup) longitudinally corrugated, and of a pale lilac colour assuming a pinkish hue on washing and exposure to the air. Duodenum containing an orange coloured slightly frothy gelatinous fluid, with a small piece of bone in its upper extremity. Its internal surface presented a uniform fleshy granular-like appearance, exactly resembling a raw excoriated surface. Over the lower two-thirds of the intestines were scattered six or eight circular patches, having at first sight the appearance of ulcers that had healed. They were all of precisely the same shape and extent being exactly circular, and nearly the size of a sixpence, with raised and well defined borders, giving them the appearance of rings. Their inner area, when minutely examined, was found to be on the same level with the surrounding membrane (the apparent depression arising from the elevation of their margin) and presented the same fleshy appearance which characterized the rest of the membrane, without any of the puckering which is usually observed in a cicatrized ulcer. In the jejunum and ileum there were irregular fleshy patches, the rest of the mucous surface being pale and smooth. Colon contained a little dark soft feculence. Its inner surface was irregularly and closely corrugated, and of a uniform bright red colour. Urinary bladder much distended, and the capillaries of its mucous membrane minutely injected.

*Remarks.* — We observe here, for the first time, capilliform injection of the omentum, mesentery, and external surface of stomach and intestines. 2d. A healthy appearance of the mucous lining of the stomach. 3d. The uniform fleshy granular, raw appearance of the inner surface of the duodenum chequered with circular patches, resembling rings. No sanguinolent exudation. Irregular fleshy patches in the jejunum and ileum. 3d. Colon of uniformly bright red colour. 4th. We observe, for the first time, the mucous membrane of the bladder minutely injected.

Altogether the appearances in this dog appear to be a less degree of the morbid appearances observed in those which had taken calomel, with the remarkable exemption of the inner surface of the stomach, and with the addition of increased vascularity of the omentum mesentery, external surface of the stomach and intestines, and mucous membrane of the bladder.

XI. — On the forenoon of the 1st February, 1839, gave a healthy dog (that had been confined during the preceding night without food) 3ss. of calomel in pill. Vomited about half an hour after, and rejected part, at least, of the calomel. In the evening gave him rice and soup. On the 2d and 3d the same dose was repeated, and followed each time by vomiting half an hour after swallowing it. On the 2d had several greenish dejections, and three or four black motions on the 3d. On the forenoon of the 4th was killed by drowning, and examined immediately after.

Liver and spleen of the usual appearance. Gall bladder distended with bile of more than usually dark colour. Considerable injection, particularly of the large vessels of the omentum and mesentery. Intestines contracted, and pale externally. Peritoneal coat of stomach very slightly injected. Stomach containing a couple of spoonfuls of a dark frothy fluid: its inner surface corrugated longitudinally, and of a deep red colour, particularly on the projecting border of the corrugations, which appeared as if dipt in blood. Duodenum contained some orange coloured fluid. Its lining membrane presenting streaks and irregular patches of a deep-red colour, apparently caused, in part, by a sanguiform secretion, which could be scraped off readily with a sponge or the handle of the scalpel, leaving the intestinal tunics pale, and thin, but entire. Jejunum and ileum very much contracted, their inner surface pale coloured generally, but presenting several small patches smeared with a dark grumous effusion, with lividity of the corresponding portions of the peritoneal membrane. Inner surface of colon longitudinally and thinly corrugated, of deep-red colour, with a smearing of effused blood on the projecting borders of the corrugations.

*Remarks.* — We notice the large quantity of bile in the Gall bladder, and the presence of a bilious fluid in the stomach and upper part of duodenum, as in Experiments ii, iii, iv, vi, and ix. 2d. Ramiform injection of the omentum and mesentery. 3d. Deep-red co-

lour of the gastric mucous membrane, particularly on the projecting border of its longitudinal corrugations, which appeared as if dipt in blood as in Experiments ii, iv, v, vi, and ix. 4th. Streaks and irregular deep-red patches, with sanguiform exudation in duodenum, as in Experiments ii, and iv, and in a more marked degree in Experiment ix. 5th. Small patches of the mucous membrane of the jejunum and ileum, smeared with a dark grumous effusion, with lividity of the corresponding portions of the peritoneal membrane. 6th. Appearance of colic mucous membrane resembling that of the stomach.

XII. — On the 30th January, 1840, at 9 A. M. gave a healthy dog five grains of calomel in pill, which was repeated at 5 P. M. Vomited an hour after the first dose. On the 31st gave a third and fourth dose at the same hours as on the day before. Vomited an hour after the forenoon dose, and was purged during the day and night : evacuations dark coloured. On the forenoon of the 1st February, was shot through the head, and examined immediately after.

Liver of a deep mahogany colour, and not bleeding on incision. Gall bladder filled with very dark green liquid bile. Biliary ducts pervious. Spleen of the usual appearance. Stomach and bowels externally of a pale pinkish colour, the latter firm and contracted. Large veins of mesentery much injected. Stomach containing about half an ounce of orange coloured frothy fluid. Its inner surface longitudinally and densely corrugated : the capillaries of the projecting convex border of the corrugations minutely injected, the remaining portion of the mucous membrane being of a pale lilac colour. The pyloric extremity less corrugated, and of a pale whitish colour. The muscular coat of the stomach firmer and more contracted than in any of the former experiments (did this arise from the sudden mode of death ?) Duodenum containing a viscid dark orange coloured frothy fluid. Its mucous membrane presenting, here and there, dusky-red streaks of what appeared a sanguinolent extravasation, removable by the scalpel, leaving the subjacent membrane of a white colour. Jejunum empty, without a trace or tinge of bile : its mucous membrane of a pale greyish colour, with here and there small capilliform streaks. Upper part of ileum containing a small quantity of dark-greenish coloured frothy fluid : its surface of a pale greyish pink colour. Lower portion of ileum empty, of a greyish colour, with here and there small injected streaks, and in some parts of a slight sanguineous exudation. Cæcum containing a little dry feculence : its mucous membrane of a natural appearance. Colon containing a little dark feculent matter. Inner surface of colon and rectum longitudinally corrugated, and minutely injected. Bladder empty and contracted ; and its inner membrane of natural appearance.

*Remarks.* — We observe 1st Capillary injection of the projecting borders of the corrugations of the stomach, the remainder of the gastric mucous membrane healthy. 2d. Small portions of sanguinolent extravasation in duodenum and ileum, the intervening portions healthy. 3d. Capillary injection of the colic mucous membrane.

The appearances altogether in this experiment are more analogous

to those of Experiment x, (particularly in the stomach and large intestines) than of any other.

XIII. — On the 30th January, 1840, at 9 A. M. gave a healthy looking dog a pill containing five grains of calomel, which was repeated at 5 P. M. Was purged two hours after the second dose — dejection dark coloured. On the 31st gave a third and fourth dose at the same hours as on the previous day. Vomited an hour after the last dose. On the forenoon of the 1st February the dog was shot through the head, and examined immediately after.

Liver of a lightish mahogany colour, giving out liquid blood when incised. Gall bladder filled with a liquid dark green bile : the three biliary ducts quite pervious. Spleen of the same appearance as in former experiment. Stomach and bowels externally greyish white, with a slight pinkish hue : the latter firm and contracted. Stomach containing a small quantity of a pale drab-coloured, viscid, muciform fluid. Corrugations longitudinal, but less numerous and prominent than in Experiment vii. Mucous membrane presenting a pale grey blanched appearance. Inner surface of duodenum of a pale grey colour : its upper portion containing a little of the same fluid as observed in the stomach, with a very slight admixture of bile ; the lower portion containing a small quantity of ash-coloured viscid fluid, like inspissated mucus. Jejunum containing a small quantity of a similar but more consistent fluid : its mucous membrane pale and uninjected. Inner surface of ileum generally pale, with numerous small detached patches of extravasated blood ; its lower portion of a palish white colour throughout. Cæcum, colon, and rectum containing a fluid similar in appearance to that observed in the duodenum. Mucous surface pale, and longitudinally corrugated. Bladder containing two ounces of urine : its mucous membrane of the usual appearance.

*Remarks.* — The appearances in this experiment are somewhat peculiar. 1st. The appearance of a pale-drab coloured, viscid muciform fluid in the stomach, and under a slightly modified form, in the upper portion of the small bowels, and in the large intestines. 2d. The gastric and intestinal mucous membrane of a pale grey colour throughout, with numerous, small detached patches of extravasated blood in the upper portion of the ileum.

XIV. — On the 21st February, 1840, a pill containing ten grains of calomel was given to a healthy dog at 10 A. M. and repeated at 5 P. M. The dog was purged in the night. On the 22d the above doses were repeated at the same hours, without any effect on the bowels. On the 23d at 10 A. M. the dog was shot through the head, and examined immediately after.

Liver of dark mahogany colour, and emitting a small quantity of blood on incision. Gall bladder containing dark liquid bile. Biliary ducts pervious. Spleen of natural appearance. Stomach and bowels externally of a greyish white colour, with here and there a faint red tinge. Large mesenteric trunks injected. Stomach containing some half digested rice. Its inner surface longitudinally and densely corrugated, and of a pale lilac colour. Duodenum containing a very little orange coloured frothy fluid : its mucous surface of a

greyish white colour. Jejunum presenting the same appearance, with here and there a little sanguineous extravasation on its inner surface. Ileum containing some thin half digested feculence: its mucous membrane of a faint rose tint. A little thin feculence in the cæcum: its mucous surface of a greyish white colour. Colon longitudinally corrugated: the upper portion of its mucous membrane presented a large patch of a dotted bright red appearance; the lower portion of a greyish white colour. Rectum containing thin grey feculence: its inner surface greyish white. Kidneys of natural appearance. Bladder contracted and empty: its mucous membrane of a faint rose tinge.

*Remarks.* — We observe the gastro-intestinal mucous membrane of a healthy appearance, with the exception of, 1st, A little sanguineous extravasation in a few places in the jejunum. 2d, A large dotted, bright red patch in the upper portion of the colon, and 3d, The mucous membrane of the bladder of a faint rose tinge.

XV. — On the 24th February 1840, at 5 P. M. a pill containing 5i. of calomel was given to a healthy dog. It vomited, and was several times purged during the night; the evacuations of a greyish colour. The same dose was repeated at 9 A. M. and again at 5 P. M. on the 25th. Vomited several times during the day and night, of the 25th but was not purged. On the morning of the 26th appeared very heavy, and refused food. At 1 P. M. on the 26th was shot through the head and examined immediately after.

Liver of a mahogany colour, of softer consistence than usual, and bleeding freely on incision. Gall bladder filled with dark liquid bile: biliary ducts pervious. Increased vascularity, both of the capillary and the large vessels of the omentum. Minute ramiform injection of the peritoneal coat of the stomach Bowels externally of a reddish white colour, firm and contracted. Mesenteric trunks injected. Stomach containing about an ounce of an orange coloured frothy fluid: its internal surface longitudinally corrugated, and of a uniform bright red tint, with a few bleeding points on the projecting borders of the corrugations; its pyloric extremity smoother and less injected A small quantity of orange coloured frothy fluid in the portion of duodenum between the pylorus and the opening of the ductus communis choledochus; and the mucous membrane of the above portion was injected in streaks, and presented several bleeding points. The remainder of the duodenum and the whole of the jejunum coated with a very viscid congee-like mucus (without any biliary tinge) beneath which the mucous membrane presented irregular, elevated, dusky red patches, with here and there small patches of extravasated florid blood. Ileum containing for about six inches of its length, a quantity of muco-sanguineous fluid, with capillary injection of a great portion of its mucous membrane. Cæcum containing a muco-serous fluid, and minutely and vividly injected. Colon densely corrugated; the corrugations being longitudinal in the upper portion, and transverse in the lower portion and rectum. The whole of its inner surface of a uniform and intensely red colour. A little muco-serous fluid in the rectum Kidneys emitting an unusually large quantity of blood on incision.

but not diseased in structure. Bladder empty and contracted : uniform bright capillary injection of its mucous membrane.

*Remarks.* — 1st, In this experiment the capillary injection of the mucous surface of the colon was more intense than that of the stomach. 2d, There was no appearance of bile below the opening of the ductus communis choledochus. 3d, There was increased vascularity of the omentum, the peritoneal coat of the stomach, the substance of liver and of the kidney, and the mucous membrane of the bladder. 4th A muco-sanguineous fluid in the ileum, and a muco-serous fluid in the cæcum and rectum.

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## Article II.

*Report on the Diseases which have occurred in the H. C.'s Steam Flotilla on the rivers of Mesopotamia, from the 1st January, to the 31st December*, 1839, *with a short sketch of the Climate and Topography.* By John C. Floyd, Esq. Surgeon in charge.

Presented by the Medical Board, April, 1841.

Before entering on the above report, I have thought it right to preface it with a short sketch of the topography and climate of the country; for, the latter are so intimately connected with the production of disease, that without a knowledge of them, it would be as difficult to understand the various diseases, extending over such a tract of country, as it would be to localize any particular one.

The country, to which this report refers, extends from 30° to 34° North latitude, and from 40° to 45° East longitude. It includes all the country between the Persian Gulf and Bagdad on the north, the Lauristan hills on the east, and the desert to the west of the Euphrates; and it has borne successively the names of Shinar, Babylonia, Chaldæa, Mesopotamia, and Irak Arabi. It forms at present the southerly division of Turkish Arabia, and comprises the greater part of the Pachalic of Bagdad.

Its physical aspect is that of an immense plain, composed of a deep stratum of black alluvial soil, watered by the Euphrates and Tigris, and intersected with numerous canals. These two great rivers, rising in the mountains of Armenia, pursue a course of several hundred miles, and then emerge from their rocky channel, about one hundred miles above Bagdad on the Tigris, and fifty above Hilla on the Euphrates. From thence, after a serpentine course of four hundred and fifty miles, during which they often approach within thirty miles of each other, they unite at Korna (said to be one of the ancient "Apameæ" built by Seleucus Nicator, now an Arab village,) forty miles above Bussora forming one of the noblest rivers of the east, which under the name of the Shut-il-Arab, runs one hundred and thirty miles further, and disembogues itself into the Persian Gulf the current averages two knots in the low and five in the high season.

These rivers in their extensive course through a flat country, are constantly changing their character, breaking down their banks and

forming islands, andt here sharing the same fate every succeeding year. The quantity of debris brought down every year, cannot be calculated with certainty, as it must vary with the rise and fall of the stream; but, that it is immensely great, there can be no doubt, from the rapid formation of islands and banks, and also from the immense alluvial banks, which are gradually extending themselves into the Persian Gulf.

Surrounding Country. — This is exceedingly bare, vegetation scanty, except on the banks of the rivers, where the pastoral Arabs feed their flocks, and in some places have settled down to cultivate the soil.

The soil from Bagdad to the Persian Gulf, is entirely alluvial, and of a depth varying from twenty to thirty feet, we then come to a blue and white clay of a very adhesive nature, which contains a quantity of silica and alumina. This is manufactured into vases and water vessels, and from its porosity, allowing of slight evaporation from the surface, the water contained in them is always deliciously cool.

No rocks any where show themselves, but from the character of the hills to the north of Bagdad and Hilla, their dip and strike into the Mesopotamia plain, I have reason to believe that they consist of a micaceous slate, gypsum, and calcareous sand-stone, the second of these abounding. Muriate of soda is an extensive product of this desert, and particularly near Bussora, where it is observed in the form of beautiful crystals, at the edge of every little pond, and it is exported in large quantities from the place. The immense ruins, composed of sun and kiln burnt bricks, which are scattered over this country, attest the greatness of its former population; the earth of these ruins, as that of Seleucia below Bagdad, when washed and evaporated, yields a considerable quantity of saltpetre.

Canals. — The number and extent of these extraordinary works, which once rendered this country so productive, we cannot do more than glance at. We are told that, "in consequence of the periodical rise of the Euphrates, artificial canals were dug by the ancient inhabitants, for the double purpose of protecting the contiguous plains from inundation, and at the same time of preserving the superfluous waters for the irrigation of the soil:"—that it had this effect, the present sterility of the upper portion of this country, and the inundation of the lower, fully demonstrate. Between Bagdad and Babylon, a distance of forty-five miles south, we meet with four very celebrated

canals, one of these, called the Nahar Malacha, or Royal canal, which Julian sailed his fleet through. The magnitude of this may be judged from the fact of the Hon'ble Company's Steamer Euphrates having sailed through one called the Succaloweia, which runs from river to river, but it is now shut up to prevent any further inundation. Another canal, called the Naharawan, runs on the east side of Bagdad, for a distance of three hundred miles; its bed is nearly dry. Midway between Bagdad and Bussora, at Kool-il-Amarah is a canal called the Hye, which runs to the Euphrates, for a distance of ninety miles; it is navigable. The only other canal which I shall mention is the famous Palla Copus, navigated by Alexander the Great, and supposed to be the ancient bed of the Euphrates. It commences below Hilla, and a branch of it was repaired for a short distance by the Nabob of Oudi as far as Mesid Ali, a place of pilgrimage. This canal being stopped up, the Euphrates has overflowed its banks, and formed an extensive, and deep lake, in the western desert

VEGETATION. — As might be expected is abundant on the banks, particularly in the vicinity of Bussora, Korna, Bagdad, and Hilla, where forests of splendid date trees, confer on the inhabitants immense wealth; along with these the glycyrrhiza, the tamarisk, and the arunda abound, and in some places the two latter form immense jungles, in which the lion and the leopard are occasionally seen. The gardens at Bussora and Bagdad, produce almost all the varieties of fruit, peculiar to a temperate climate, and even some of the tropical plants flourish here, as the mango, the plantain, and henna: all the European culinary vegetables are likewise yielded in abundance. As rain does not fall in sufficient quantities for agricultural purposes, all irrigation is artificial, and carried on by means of water wheels, worked by bullocks. The different sorts of corn, sesamum orientale, (an oil plant) are cultivated in great abundance, also, cotton, opium, indigo, rice and tobacco.

The delta enclosed between the Euphrates and Tigris, has, not unaptly, been compared to that of Egypt; for in the time of Herodotus, the ground yielded three hundred and sixty times more than it received, and whatever may be the approach to truth, when oriental historians fix upon it as the site of the "Garden of Eden," certain it is, that its capabilities are as evident as ever, though the caperbush, the colocynth (of the Pharmacopeia) some species of mimosa, the camel-thorn, the salix Babylonica, and a few saliferous plants, are all that now relieve the eye, in a country which once yielded produce equal to a third part of Asia.

The Inundations. — The banks of these rivers are exceedingly low, and thereby easily overflowed, at the time of the annual rise, these take place in the spring and summer months, from the melting of the snow in the mountains of Armenia, they form an important feature in the medical topography of this country, as they completely change the nature of the climate where they prevail. The rivers often fall and rise during the winter months, but the grand rise takes place in the Tigris in April, and in the Euphrates in May, when the former rises about eighteen feet and the latter fourteen feet, and the current which before was only one and a half, is increased to five knots. Notwithstanding this the rivers keep their height, the banks then give way and a more or less extensive inundation covers the country, depopulating villages and laying waste the gardens and fields; such at least was the case at Bagdad in 1839, when from the above cause half the town was under water, but such are temporary and soon retire, as the rivers again descend in August and September.

From Bagdad and Hilla northwards the country is not so liable to these inundations as the banks are higher. About thirty miles above the junction of the rivers at Korna the desert is always one sheet of water. Carry a line from this point across the Euphrates, and from thence over the desert to Bussora and Tobier, it is one vast marsh for a distance of seventy miles. This inundation took place about eleven years ago, shortly before the last plague. A line of banks was formerly kept up along the Euphrates to keep the water out, but these have been completely swept away, and the Government of the country are neither able nor willing to repair them, which would recover a fine tract of country, secure Bussora from ruin and the inhabitants from disease. Indeed, it is not improbable that the Euphrates will find its way into its ancient channel, which emptied itself near the modern town of Grane in the Persian Gulf.

Climate. — The climate of this country must vary exceedingly, as we descend from the snow clad hills where the rivers have their source; but, of that portion, between the Persian Gulf and Bagdad, included in this report, there is little difference unless where local causes operate. The seasons may be divided into the spring, hot, and cold; the former commences about the end of January and continues until the end of April. The Thermometer ranges from 50° to 70° daily, though sometimes it rises much above this; north and south winds blow alternately for five or six days at a time, and at their change sometimes heavy showers of rain descend and

renew the verdure of the desert: all agricultural operations are now carried on. May is the first of the very hot months, in it the corn ripens and is gathered in, before the end of June, when the thermometer averages 105° daily, and every thing appears scorched from the sun. The heat of July and August is intolerable, the Arabs call it "saum" or the date harvest; the thermometer is 115° in the shade and the inhabitants take shelter in their surdaubs or cellars. Hot winds occasionally prevail; the nights however are cool; the atmosphere free from moisture, except near the marshes; and refreshing sleep in the open air compensates, in some degree, for the enervation produced by the heat of the day. In September the heat gradually declines. The cold weather commences in October when there is a variation of 20° to 25° daily, and from this to the end of January it is not unusual to see every thing frozen on the decks. The prevailing winds are the north-west and south-east, called by the natives the Shumaul and Shirgee, they blow chiefly in the winter and spring. Tornadoes or whirlwinds are not uncommon in the hot weather; they approach giving but little warning, and carrying an immense cloud of dust which involves every thing in obscurity. It was in such an one that His Majesty's Steamer "Tigris" was lost on the Euphrates in 1835.

The following table taken from the register of the thermometer kept in the cabin of the Euphrates, which is rendered very cool by wind sails will elucidate the above.

*Table Showing the Maximum, Minimum, and Mean Temperature, as registered from the Thermometer at Bagdad for the year* 1840.

| | Maximum. | Minimum. | Mean. | Prevailing Winds. |
|---|---|---|---|---|
| January | 64 | 25 | 50 | N. W. and S. E. with rain. |
| February | 68 | 36 | 57 | N. W. and S. E. with little rain. |
| March | 75 | 36 | 66 | Strong N. W. |
| April | 83 | 48 | 74 | Ditto. |
| May | 95 | 65 | 77 | Towards the end of the month hot winds. |
| June | 101 | 72 | 87 | N. W. breezes. |
| July | 105 | 78 | 98 | Calm clear weather. Thermometer 105° underneath the awnings and 135° in the sun. |
| August | 108 | 79 | 97 | Hot winds. |
| September | 100 | 65 | 85 | N. W. Temperature of river 80°. |
| October | 97 | 58 | 67 | S. W. with squalls. |
| November | 76 | 51 | 63 | Rains with Squalls. |
| December | 65 | 33 | 45 | In the four part of this month N. W. with rain, in the latter frosts. |

Besides the general account of the climate and country it is necessary to particularize three principal stations of the steamers.

*Bussora* is situated upon the Shut-il-Arab, ninety miles from the sea, in Latitude 30° 27′ 30″ north, and Longitude 47° 40′ east. The town has been depopulated by the plague and scarcely numbers at present 15,000 souls: the houses are in ruins and every place exceedingly filthy. The canals which intersected it are never cleared out, and instead of proving beneficial to the town, are a never failing source of miasmatic fevers from the decomposed animal and vegetable matter which they contain. The banks of the river, above and below Bussora, are low and lined with lofty date trees, between which, a jungle of liquorice, rank grass and reeds, rise and contributes its share in the production of fever after the inundation of the rivers in June, extensive marshes also lie to the west and north of the town. The heat at Bussora, is not so great as at Bagdad; but the atmosphere is always loaded with moisture which renders it dangerous to sleep in the open air. The inhabitants have a sickly appearance and such is the dread of Bussora, that it is not unusual for natives higher up the river, before going there to transact business, to make their wills lest they should never again return. Intermittent and bilious remittent fevers, prevail from May to October, and during that time the place is exceedingly unhealthy.

*Marghill.* — Four miles to the north of Bussora, is a village called Marghill, at this place there is a very large quadrangular building belonging to the Resident at Bagdad, which has hitherto been occupied as a depot, on account of its contiguity to the river, while the steamers were erecting, and furnishing stores for depots and any wards for an hospital in case of sickness. What has already been said of Bussora applies with equal force to this place, except that there is not the filth of the town.

The Hon'ble Company's Steamers and vessels ought not to lie here in the hot months longer than can be avoided. An Arab town called Mohumrah, situated at the mouth of the Kowran, thirty miles below Bussora, is a much healthier place, and from this to forty miles above Korna, either river, can be steamed in one day, by which the marshy country is passed and the upper parts of the rivers are then comparatively healthy. The distance from Bussora to Bagdad is two hundred and fifty miles by land, and and four hundred and fifty by water: the steamers take six days in going up (steaming only during the day) and three days returning.

*Hilla.* — Adjoining the most remarkable scene of desolation which the eye can picture, in the extensive ruins of ancient Babylon, is the modern town of Hilla, built on both sides of the Euphrates. It contains 7,000 inhabitants, has good caravanseras, and carries on an extensive trade with Bussora and the districts higher up the river. The town is clean and is generally healthy; sometimes intermittent fevers prevail in spring and September owing to the great marsh to the south.

*Bagdad* — situated on the Tigris in Latitude 35° 15′ 40″ north, Longitude 44° 24′ 45″ east, though it retains little of its former splendour, it is still an immense place. The town is built upon the alluvial soil, and is somewhat lower than the river, which in summer percolates the ground and fills the surdaubs with water. The bazars are extensive and abound with most of the ordinary necessaries of Europeans. The inhabitants number 100,000, a fifth of whom are Jews and Christians. The town is generally free from disease, unless when visited by the plague, which they say happens every sixty years on a large scale, and a minor one every thirty. Though the extremes of heat and cold are felt here, the climate is perfectly healthy. To avoid the great heat the inhabitants live in surdaubs or cellars, where the thermometer stands as low as 78° while at the same time in the shade it will be 115°; and the nights are so dry and cool that they sleep on their terraces with perfect impunity.

Population. — The population consists of two classes, the Arabs of the desert, and the inhabitants of the towns. The desert Arabs in this part of Arabia, have given up in a great part their predatory occupation, for the more certain one of agriculture. One large tribe called the Montifidge is extensively engaged in the commerce of the rivers; their mode of life is excessively simple. They have not the vigor or stature of the Arabs to the north, and do not live to a good old age, owing I think to their living chiefly near the marshes and being worn out with fever; their clothing consists of a black or white camlet cloak; a long coarse shirt and a chaffen with a small turban for a head dress. They live in black tents made of horse hair or reed huts. Another class of Arabs are employed in tracking boats up the rivers, they are oftener in the water than out of it, and it is extraordinary how they bear the intense heat of the sun without any covering but a small cumberbund. To protect themselves from the swarms of musquittoes by night, they roll their bodies in the

mud and in the morning wash it off, they are not proof against the climate and they sink suddenly when attacked by fever.

The inhabitants of the towns, as I have already said, are composed of Arabs, Turks, Chaldeans, Armenian Christians, and Jews. The two latter are the same enterprizing and parsimonious people here as in all other parts of the east, and engross the chief part of the commerce. Large towns have been seldom found to be good nurseries for morals, and accordingly we find that the Turks, as well as Christians, have added the pleasure of the cup to the pipe, and the Government have sanctioned the establishment of drinking houses, where a deleterious drink, made from aniseed, dates, sugar, and hushash, ("*The Cannabis Sativa*") is sold; and it is not uncommon to see the Türkish Nizam rolling drunk in the streets.

It is well known that the Turks were formerly great opium eaters, it is now rare to find one in Bagdad, but it is worthy of statistical record, that the use of this pernicious drug has been merely laid aside for that of intoxicating liquors, which have increased so much of late, that the Koran has become a dead letter in the land of the Prophet. Pork is sold openly in the bazars, and debaucheries, heretofore unheard of, are publicly permitted.

*Chaldean Christians.* — These people merit a distinct notice. They are called Chaldeans, Mestorians, and Mooslies, because they come from the hills in the neighbourhood of Mosul on the Tigris; they are of middle stature, athletic, and not wanting in courage They are honest, and hard workers, and are chiefly employed in Bagdad and Mosul as domestics.

They have been, not unaptly, compared to the Irish peasant, as they resemble him in dress and are exceedingly pugnacious. It is from these people that the native portion of our crews is taken; being Christians they agree very well with the Europeans, they work willingly and are capable of enduring great fatigue.

Prevailing Diseases. — The diseases which prevail in this country, and from which the natives without any distinction suffer, are intermittent and remittent fevers, dysentery, scrophula, ophthalmia, and rheumatism. The natives have the fever in its intermittent form; they are easily cured by bark or quinine, but as neither advice nor medicine are procurable in this country, they often drag out a miserable existence and death ensues in consequence of some visceral disease

There are few of the natives but suffer from gastric and intestinal irritation which shows itself in the spring and October, in the form of mild dysentery. A variety of causes combine to produce this effect on the system of natives, among these may be noticed the frequent great diurnal range of temperature, their long religious fasts, and their excessive use of melons, cucumbers, and the like; to which, I think, may be added the continual sipping of hot coffee.

Scrofula is met with under the form of diseased joints and phthisis

Diseases of the eye are so common, both in the towns and desert, that it is rare to meet a person without some abnormal affection of those organs: cateract is very prevalent in those men who have passed their climacteric.

Diseases of the skin are not of frequent occurrence, if we except the date boil. This I attribute to the natives in the town frequenting the humaums; and the Arabs often laving themselves in the river.

The epidemic diseases which prevail here, are, variola, rubeola, and influenza; the former is not very fatal owing to vaccination being universally practised. It is, I believe, to Mrs. Rich, the lady of the late Bagdad Resident, that this great blessing is due.

A case of idiopathic tetanus from cold occurred to one of our post men; with the true Mussulman resignation, he refused to try any remedies and submitted to his fate.

There is only one species of venomous serpent known here, and fortunately it is very rare. On the contrary, large black scorpions swarm here in summer, and their sting is said to prove fatal to young people, for this the bezoar stone is in great repute with the natives. The greatest nuisance in the town and villages of Mesopotamia is the great number of filthy and diseased dogs, without masters, but suffered to exist for the purpose of consuming the refuse in the streets; strange to say, that amongst them hydrophobia, not only never occurs, but is not even known by the inhabitants.

The natives invariably have themselves bled once a month, when a small tea-cupful is generally taken away, and in the absence of aperient medicines, it may be serviceable in lessening the disposition to inflammatory disease, and perhaps affording one reason why they seldom have fever in its remittent form.

A few ignorant French medical adventurers in the service of the Pacha, with the native practitioners, represent medical science in this country. The latter class I am told are much the same here as all other oriental Hakeems, and have little discrimination in applying their remedies. A great number of oriental drugs are found in the Bagdad bazars, many of which are indigenous to this place

Health of the Europeans. — From what has already been stated respecting this climate, where the extremes of heat and cold are apparent and the heat exceeding that of India, it may be thought any thing but salutary for Europeans. The annexed register of the diseases which have occurred for the year ending 30th December, 1840, certainly shows a fearful amount of disease among such a small body of men; but it is to be remembered that almost all the diseases included in the returns, have had their origin in Bussora or its locality, from causes which I shall presently mention, and that above this place, the climate, though hot, is perfectly healthy as is proved by the crew of the Euphrates having been for the last three years employed in the upper part of the rivers, and during that time enjoying better health than in the most favoured European climate.

We cannot exactly tell the effect of Bussora climate upon sound constitutions; for the seamen and artillery men who compose our crews, were either notorious drunkards or else worn out by a long residence in a tropical climate; and then again, the difficulty of treating men in a small vessel, where the radiated heat is great, the washing of decks, the excessive noise, and the impossibility of regulating their diet, all tend to disturb the patient and render a satisfactory termination less probable.

From January, 1840, until the end of March, the native and European crews of the Euphrates, were employed at Marghill in assisting at the building of three other iron steamers. The sick admissions amounted, to fifty-seven, of these six were cases of diarrhœa, one hepatitis from drinking, and the rest chiefly relapses from intermittent fever, which they had caught here, in the November previous, while digging docks for the steamers.

In April I went up to Bagdad in the Nimrod on duty, and leaving the three other steamers to wait for the crews which were expected soon to arrive from Bombay. The Euphrates arrived at Bagdad on the 2d of June with two men ill from remittent fever, who died two days afterwards. The crews in the mean time arrived from Bombay but not sufficiently strong to work the vessels; towards the end of June every man was laid up with fever, and before we could arrive at Bussora to render assistance, two Engineers had died, and many of the others were in a precarious state. It was however imperative to bring the vessels up the rivers for a change of air; the convalescents, as well as the strong, were obliged to work during the greater part of the day, the thermometer standing at 112° under the awnings, and after eight days the vessels arrived at Bagdad. Officers as well as men, being much exhausted, and the sick getting worse, a large wel

ventilated house on the river, was immediately procured and converted into a temporary hospital, to which the sick were removed; towards the end of August, the sick began to be convalescent, and it was deemed advisable to remove the steamers to Gararah, four miles south of Bagdad, where they might exercise themselves in the shade of the date gardens.

During the time the men were in hospital, the thermometer averaged 105° in the shade. Four deaths occurred from remittent fever, which with the four mentioned above, make eight from fever, besides one death from hepatic abscess, one from dysentery, one from phthisis pulmonalis, and one from disease of the heart. Eight have been sent to the Presidency for a change of air, and four others must be sent this month for the same purpose.

The foregoing is a brief account of the causes which have led to such fatal results and crippled this Flotilla for the rest of the year, all of which might in a great measure have been obviated had the crews been stronger and more equal to the vessels; and we cannot but sympathise with the European soldiers and seamen, who have to suffer under such circumstances.

We shall now make a few remarks on the above diseases as they occurred.

*Remittent Fevers.* — This fever prevails at Bussora from June until September, when it changes its character and becomes intermittent. It is chiefly of a bilious nature and is always complicated with affection of the brain and abdominal viscera; and continues from one to three weeks if not arrested by medical treatment. The patient usually complains of a dull pain in the head and a sense of lassitude for some days previous to the fever, which is afterwards ushered in with chills, and the patient though really hot, complains of cold. This however is of short duration; the headache increases, the pain being chiefly referred to the temples and eye brows; the eyes suffused; the skin becomes burning hot; epigastrium painful; stomach irritable with vomiting of bilious matter; tongue loaded, dry, and coated with brown at its back part; bowels usually costive, sometimes slight purging; urine scanty and scalding; thirst urgent; pulse varies from 105° to 120° full and strong. If the disease be not subdued in time by medicine, this state of things continues for six or seven days, then there is great anxiety, the countenance has a vacant appearance; the motions become black, fœtid and frequent; the patient lies chiefly on his back; there is considerable nervous agitation dark brown

tongue, the stools are passed involuntarily, and the patient dies in a fit of delirium or comatose.

Sometimes however the Bussora fever occurring in weakly constitutions is protracted for weeks, petechiæ occur and sordes covers the teeth, and then death takes place from exhaustion and inanition, as in some cases of typhus. Seventy-four cases of the above fever are included in the return, but if we make allowance for the re-admissions, fifty will be a nearer approximation to the truth.

The treatment adopted consisted of bleeding freely from the arm in the commencement of the disease. This was always followed by instantaneous relief to the head and epigastrium, while at the same time it prepared the way for the introduction of mercury; and an emetic cathartic mixture was then exhibited, unless whenever the irritability of the stomach forbad it. The rest of the treatment consisted in relieving local pain by means of cupping and leeches, and the introduction of mercury combined with antimony, saline draughts, &c. enemata were of great use in relieving the tension of the abdomen, and the motions changing their dark colour for a more natural one, is the first favourable symptom.

It is very difficult to affect the system with mercury in this disease; some patients took one hundred and sixty grains without being affected by it, and in all those where it succeeded, a rapid recovery soon took place. The reason of this difficulty is, that the fever is a highly inflammatory one; the remissions are very indistinct, unless in debilitated constitutions, and in these we gave quinine.

The recoveries from the fever are often tedious and it has an evident tendency to disorganize the mucous membrane of the bowels. The pathology of the above fever we think will bear out the treatment which was adopted. Cerebral congestion and patches of inflammation in the chylopoietic viscera were always present, with softening of the liver and mucous membrane of the bowels: the casualty cases of Houston Bynam, and Gunner William Brown, furnished to the Medical Board, will illustrate the above. My observations led me to conclude that as miasmatic fevers proceed from the same source, the poisonous miasm may lie dormant in the system for some weeks before giving rise to fever, and that then it is produced in its remittent form through exposure to atmospherical heat or some debauch.

I shall now mention two or three cases to illustrate the above. Andrew Moir, engineer of the "Nimrod" left Bussora on the 25th of March; he performed his duty up to Bagdad where he arrived on the 2d April; he enjoyed very good health until the 21st, when having got

intoxicated and exposed himself to the sun, which was now very hot, he was seized with rigors followed with high fever, and complicated with inflammation of the liver; he was bled with relief to his side; Mercury was freely given. The fever however continued with slight remissions; delirium, involuntary motions, and petechiæ, supervened; yet, notwithstanding he recovered after being seventeen days ill.

The next case is that of Engineer Hamilton. He had slight ague at Bussora in June, and left that place on the 2d July, apparently well, he was much worked coming up the river, being exposed to a temperature of 140° in the engine room, and 115° on the deck. On the 11th he arrived at Bagdad, only a little fatigued, as he said, after his nine days work; on the 14th, he was seized with severe fever and died on the 24th. His case has already been furnished to the Medical Board, so that it is not necessary to make any further remarks here, than, that ptyalism could not be produced.

Acting Master Holland, had remittent fever at Bussora in July, and was brought up in the Steamer Nimrod, in August, for a change of air; he continued in good health for fourteen days after his arrival at Bagdad, when by some indiscretion in cooling himself when the body was over heated, he was seized with fever complicated with pleuro-pneumonia, the latter was subdued by bleeding and tartrate of antimony; but the headache, epigastric tenderness, and dark fetid motions continued until the gums became sore, when he rapidly recovered again.

Acting Master P. one Gunner and Corporal Maltman, left Bussora in the cold weather, all well. Seventeen days after their arrival at Bagdad the Corporal had fever in its intermittent form, while the two others from indulging in some excess, got fever in its remittent form. They were bled, purgatives and diaphoretics administered, and at the end of six days they resumed their duty. Had these latter occurred in the hot weather, the termination might have been different.

*Intermittent Fever.* — The crews of all the steamers, save the Nimrod, suffered from this fever, having caught it at Bussora in June and October.

I shall not dwell upon the symptoms of a fever which has been so often described and must be so well known in India. It prevailed chiefly in its tertian form, the cold stage is of long duration and the entire paroxysm continues from three to five hours. The debility in consequence of this fever, is very great, and the most athletic person is soon reduced in strength.

Though malaria, the exciting cause of this fever, never ceases to exist here, yet, I am of opinion, that the predisposing causes, such as sleeping on the decks in the humid state of the atmosphere, depressed spirits and intoxication, had more share in bringing on the attack; for, nine cases out of ten, were preceded by some abnormal state of the stomach and bowels.

The treatment consisted in the first place in restoring the secretions by mercurial purgatives; emetics and diaphoretics were exhibited during the hot stage; and afterwards quinine was liberally given as an anti-periodic. Venesection was tried in several cases, but with no apparent benefit; however indispensable it is in the bilious remittent, it would be too expensive a remedy for the constitution to undergo, on every attack of this fever. Quinine, arsenic, and nitrate of silver, have all had their trial; quinine, though a valuable remedy for intermittent fever has signally failed here, though administered in very large doses. This we attribute to Lunar influence and the southerly winds which generally attend the change of the former. The fever from this cause is so regular an occurrence, that it is not uncommon for the men to come for their quinine a day or two before the expected attack. A change of climate by sea has proved itself to be the only effectual remedy for Bussora fever. The sequelæ of these frequent attacks of intermittent fever, are more to be dreaded than the disease itself. Of these in the returns, there is one case of enlarged spleen; this yielded to a course of alteratives and quinine. Two cases of abdominal dropsy; one of them an artillery man had disease of the heart and the swelling always returned: he was sent to the Presidency. The other was owing to enlarged spleen and general debility; it yielded to blue pill, squills and digitalis, followed by tonic: it is now ten months since and the patient continues in good health.

*Hepatic Affections.* — Of these, fourteen are included in the returns: three however, are re-admissions; of the remainder, six were chronic, and five acute. There was nothing peculiar in any of these cases, they all occurred in men who had served in India and seemed to be owing partly to intemperance and partly to the sudden vicissitudes of the climate which are not favourable for such a class. One casualty occurred from hepatic abscess in Gunner James Ward, he had been ill with the disease in Bombay, five months previous to coming up here, and afterwards suffered from intermittent fever at Bussora: the only thing worthy of remark was the small slow pulse sel-

dom exceeding 58 and the entire absence of constitutional irritation. This case was furnished to the Medical Board.

*Dysentery.* — Of this disease seven cases are returned and one death. This casualty, though under this head, I am inclined to regard as a case of gastro-enteritic fever after ptyalism was produced, the patient seemed to do well for eleven days, he then relapsed and died six weeks after his coming into hospital. This case, was also furnished to the Medical Board. Of the six other cases one was colonitis which occured to acting Conductor Grady. Venesection, small doses of calomel, and opium, and anodyne enemata, was the successful treatment.

*Diarrhœa.* — Twenty cases of diarrhœa are returned, the most of these were simple cases of increased intestinal secretion, owing to some error in diet or the water in the neighbourhood of the marshes which is brackish, and full of vegetable matter.

One however was the sequela of remittent fever, continued three months, and was finally cured by sulphate of copper in half grain doses, thrice a day, after all other remedies had failed, two others cases of chronic diarrhœa occurred in two officers, brothers, Lieutenant ———, and Captain ———, of the ——. They had both suffered from disease of the bowels in India, and there is no doubt but that it was connected with tubercular disease of the intestines in both. They were both sent to Europe for a change of climate, and we regret to add that Lieutenant ———, has since died on his way home.

*Dracunculus.* — One case occurred to an Indian servant, but it is not indigenous to this country.

*Thoracic Affections.*— Under this head are included nine cases, of which four were bronchitis, two pneumonia; and three cardiac diseases. Of the latter, one has proved fatal, and another has since died at Karrack, both the patients were artillery men, and had suffered from fever at Bussora; one of them recovered and soon after got an attack of bronchitis upon which supervened enlargement of the heart, palpitation, dyspnœa, and œdema of the legs. The pulse at first 115 after using digitalis some time it came down to 65. The patient after being ill two months was sent to the Presidency and died on his way down. The third case is enclosed with this report as a casualty.

While on this head we think it right to notice, that numerous cases of affection of the heart have occurred amongst our Europeans, while

under treatment for intermittent fever, it does not in the first instance amount actually to disease, but if not attended to, it may prove itself the precursor of further mischief. They usually complain between the periods of the attack of fever, of a soreness in the left side, sometimes amounting to pain and extending into the shoulder and arm of the same side. Pain increased on taking a deep inspiration, decubitus on the affected side, and sometimes in a semi-erect position. The pulse is little altered at the first, there is no fever, and the bowels are generally costive. The patient seldom complains unless he gets worse or unless questioned by the medical attendant. The stethoscope does not indicate any change in the organ itself save the strong systolic sound of the ventricles. The whole seems to depend upon an excessive irritability of the muscular parietes produced by the slow circulation of the venous blood, during the frequent cold stages of fever. It generally yields to local bleeding, digitalis and morphia with an occasional laxative.

*Phthisis Pulmonalis.* — Of this disease two cases occured, one died here, and the other was sent down. Both lungs were found to be a mass of tubercles in different stages of suppuration.

*Rheumatism.* — Ten cases are returned, but four of them are re-admissions and one continues on the list. This disease next to fever is the most difficult to treat owing to the atmospheric changes and southerly winds. The remaining case has resisted every known remedy; sarsaparilla and hydriodat. potassæ given, as anti-mercurial, which appears to have done some good.

Surgical Cases. — It might be expected that the working of such weighty machinery as the engines and boilers of four steamers would have been attended with serious accidents, such however, was not the case, two fractured fingers which were amputated, and a few contusions were all.

*Ophthalmia.* — One case of iritis and one of conjunctivitis. Six cases of purulent ophthalmia occurred in the families of the artillery and are not included in the report. This disease is endemic in the month of July and August; it is as severe as the Egyptian variety, and requires the most active antiphlogistic treatment with the application of nitras argenti (in its chronic stage.)

*Ulcers.* — Of these eight cases, one is an old syphilitic sore. The rest are date marks. This curious ulcer which prevails upon these rivers from Aleppo to Bussora, attacks all classes indiscri-

minately, young old, rich, and poor, all suffer alike. The native children generally have it upon their cheeks where it leaves an ugly cicatrix. while the Europeans have it mostly on their hands fore-arms and legs, and generally, within six months after their arrival. Few in the flotilla have escaped it, though it is seldom so bad as to put them on the sick list. This ulcer has been well described by Dr. Russel in his history of Aleppo and is well known in the East as the "*Antash pharse*," *Bouton d'Aleppe*, *Timurmal Bagdad* (or date mark) it is of purely local origin being more virulent at Aleppo less so at Bagdad, and least of all at Bussora. The Arabs on the rivers never get it unless when they reside in the towns; it seldom attacks the same individual the second time but still there are examples.

Of the causes said to produce, it we shall not here add to the numerous hypotheses respecting it. The water has been blamed for it, but it exists in an equal degree where that essential is good or bad. It is unattended with constitutional symptoms and the treatment therefore is perfectly local. It is at first an indolent ulcer somewhat larger than a rupee with pale granulations, it then becomes exceedingly irritable eating into the sub-cutaneous cellular membrane, bleeding granulations then sprout up to the surface, then it becomes covered with a thick scale, which soon falls off and it again goes through the same process without any attempt to cicatrization, this continues for eight or nine months. In some cases it has all the appearance of a syphilitic ulcer. The treatment which we have found most serviceable, consists in poulticing in the first instance with bread or yeast, if it can be had, and afterwards applying the lotion of chloride of soda twice a day, and weak acetate of lead ointment with opium during the interval: the limb at the same time is benefited by the application of a moderately tight bandage; under the above treatment the ulcer will heal in four or six weeks. Water dressing, when it can be applied, as on the arm or hand, with oiled silk is attended with like success. Iodine has been tried without benefit.

*Concluding Remarks.* — The foregoing remarks have been necessarily curtailed on account of the limits generally assigned to a report, but I believe that the diseases already mentioned may be considered, to prevail always more or less amongst Europeans serving in this country.

From what has already been said respecting Bussora, I have only to repeat that the sea and the river steamers ought not to remain at Bussora during the months of June, and July, August, and Septem-

ber, but that another depot should be established for that purpose nearer the sea. Secondly that in case of sickness occurring higher up the rivers two houses should be kept in readiness at Bussora and Hilla, to which they might be removed to be under the superintendence of a medical officer; and thirdly, as the hospital in Karrack has been made available for the sick of this flotilla, invalids will henceforward be sent there for a change of air, if necessary.

## No. I.

*Return of the Sick belonging to the Hon'ble Company's Steam Flotilla at Bagdad, from the half year commencing* 1st *July, and ending the* 31st *December,* 1840, *Together with Grand Total of Sick for the year ending* 31st *December,* 1840.

Strength { Europeans . . . . 96 / Natives . . . . 76 } 172 Total.

| Disease. | Apoplexy | Asthma. | Cholera Bilious. | " Spasmodic. | Cutaneous diseases | Cachexia. | Diarrhœa. | Dropsical Affection. | Dysentery. | Dislocations and Sprains | Delirium Tremens. | Dracunculus. | Fractures. | Fever Remittent. | Fever Intermittent. | Gonorrhœa. | Hepatic Affect. Acute | " Chronic. | Inflammation. External. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Remaining 1st July, 1840. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | |
| July. | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | .. | 1 | .. | 29 | 25 | .. | .. | 3 | .. | |
| August | .. | .. | .. | .. | .. | .. | 1 | .. | 3 | .. | .. | .. | .. | 4 | 12 | 1 | .. | 1 | .. | |
| September. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 2 | 7 | .. | .. | 2 | .. | |
| October | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | .. | 1 | 10 | .. | .. | 1 | .. | |
| November | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | 4 | 7 | .. | 2 | .. | .. | |
| December | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | 1 | .. | 6 | .. | .. | .. | .. | |
| Total. | .. | .. | .. | .. | .. | .. | 10 | 1 | 5 | 1 | .. | 1 | 1 | 42 | 67 | 1 | 2 | 7 | .. | |
| Total included in the half yearly Return ending the 30th June, 1840 | .. | .. | .. | .. | 1 | .. | 10 | 1 | 2 | 1 | .. | .. | 1 | 33 | 39 | 1 | 5 | .. | 7 | |
| Grand total for the year 1840 | .. | .. | .. | .. | 1 | .. | 20 | 2 | 7 | 2 | .. | 1 | 2 | 75 | 106 | 2 | 7 | 7 | 7 | |
| Discharged | .. | .. | .. | .. | 1 | .. | 19 | 2 | 6 | 2 | .. | 1 | 1 | 67 | 106 | 2 | 5 | 7 | 7 | |
| Died. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 8 | .. | .. | 1 | .. | .. | |
| Remaining 1st January, 1841 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | |

## No. II.

*Return of the Sick belonging to the Hon'ble Company's Steam Flotilla at Bagdad. Continued*

| Disease. | " Cephalic. | " Thoracic. | " Abdominal. | Affection of the Urinary Organs. | Mania. | Ophthalmic Affections, Acute. | " " Chronic. | Phthisis Pulmonalis. | Rheumatism. | Spleen Disease. | Syphilitic Affection Primary. | " Secondary. | Small Pox. | Scurvy. | Ulcers. | Wounds. | Other diseases. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Remaining 1st July, 1840 . . | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 |
| July . . . . . | 3 | .. | 1 | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | 1 | 71 |
| August . . . . . | .. | .. | .. | 1 | .. | .. | .. | 1 | 2 | .. | .. | 1 | .. | .. | 1 | .. | 1 | 29 |
| September . . . . . | 1 | 1 | .. | .. | .. | .. | .. | .. | 3 | .. | .. | .. | .. | .. | .. | .. | 1 | 18 |
| October . . . . . | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 16 |
| November . . . . . | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 1 | .. | 19 |
| December . . . . . | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 11 |
| Total. . . . . | 4 | 1 | 1 | 3 | 1 | 2 | .. | 2 | 6 | .. | .. | 1 | .. | .. | 4 | 2 | 3 | 168 |
| Total included in the half yearly Return ending the 30th June, 1840. . . . . | 2 | 8 | .. | .. | 1 | .. | .. | .. | 4 | 1 | .. | .. | .. | .. | 4 | 2 | 10 | 133 |
| Grand total for the year 1840. | 6 | 9 | 1 | 3 | 2 | 2 | .. | 2 | 10 | 1 | .. | 1 | .. | .. | 8 | 4 | 13 | 301 |
| Discharged . . . . . | 6 | 8 | 1 | 2 | 2 | 2 | .. | 1 | 9 | 1 | .. | 1 | .. | .. | 8 | 4 | 13 | 279 |
| Died . . . . . | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 12 |
| Remaining 1st January 1841. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 5 |

## Article III.

## *Reports of the 1st Troop Horse Brigade, stationed at Sholapoor, Poona and on Field Service in Scinde for the years* 1838, 1839 *and* 1840. By A. H. Leith Esq.

Presented by the Medical Board, April, 1841.

### Report for 1838.*

General Observations. — During the first nine and half months of the past year, the troop was stationed at Sholapoor; it left that cantonment in the middle of October, and marched to Poona where it has been only for two months.

In a review of the practice among Europeans during the year, dysentery is the disease, which combining severity with frequency of occurrence, is most prominent on the list. In February it bore somewhat of an epidemic character, and its prevalence at that time may have been connected, in some measure, with the cause of cholera which then continued to rage in the surrounding country, and again made its appearance among the Europeans of the troop.

Small Pox, was another disease of severity, that also in February visited us, but was confined to two cases. The fever cases I have found to be generally of a tractable nature. Cases of syphilis, which occurred but seldom in the first half of the year, have latterly been very numerous and the cause of a heavy sick list; all available measures have been taken to check the disease without avail.

Drunkenness, which is the cause so prolific of disease among Eu-

*Stationed at Poona.

| | Strength. |
|---|---|
| Included in the returns. | 106 |
| Absent on command beyond the division or on leave. | 3 |
| | 109 |
| *Number of Sick.* Total. | 8 |
| Remained 31st December 1837 | 335 |
| Admitted in 1838 | 321 |
| Discharged | 3 |
| Died in hospital. | 19 |
| Remaining 31st December 1838 | 14 |
| Average daily number of sick for the year. | 0 |
| Average number of convalescents | 1 |
| Died without receiving medical treatment. | |
| *Changes since 31st December 1837.* | |
| Recruits joined | |
| Discharged from the service on account of disease | |
| Discharged from the service on account of other caues | |
| Invalided. | 2 |
| Pensioned | |

ropean troops in India, must be particularly referred to here as the cause of a large portion of the cases admitted, not merely indirectly, by giving a proclivity to the ordinary diseases of the country but directly, for most of the wounds, contusions and cases of dyspepsia, and cephalalgia are the immediate results of it. The soldier, both at Sholapoor and here, has great facility in getting ardent spirits in quantities limited only by his means of paying for it.

*The following is a Tabular view of the diseases among Europeans treated in the Hospital of the Troop during the last year. It shows both diseases, when a patient was treated for more than one.*

| Mean Temperature | 69.78 | 75.68 | 79.85 | 85.60 | 89.36 | 80.62 | 80.10 | 78.75 | 78.58 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean Range of Thermometer | 25.36 | 21.37 | 16.39 | 20.79 | 18.50 | 10.62 | 14.68 | 13.97 | 11.97 | | | | | | | |
| Diseases | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total treated. | Cured. | Died | Sent for change of Climate. | remaining under treatment. |
| Asthma | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Burn | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Cardiac Affection | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Cephalalgia | .. | .. | 3 | 2 | 1 | 1 | 2 | 1 | .. | .. | 2 | .. | 12 | 12 | .. | .. | .. |
| —— a ——Intermittent | 1 | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 3 | 3 | .. | .. | .. |
| Cholera | .. | 3 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 4 | 3 | 1 | .. | .. |
| Constipation | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Contusion | 3 | 1 | .. | 3 | 2 | 1 | .. | 1 | .. | 2 | .. | 1 | 15 | 15 | .. | .. | .. |
| Cutaneous diseases | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | 1 | .. | .. | 1 |
| Cynanche Tonsillares | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Delirium Tremens | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Diarrhœa | .. | .. | .. | .. | 2 | .. | 2 | .. | 1 | .. | .. | 1 | 6 | 5 | .. | .. | 1 |
| Dysentery | 2 | 6 | .. | 2 | .. | 2 | 2 | 3 | .. | 2 | 1 | 1 | 21 | 20 | .. | 1 | .. |
| Dyspepsia | 1 | 3 | .. | .. | .. | 2 | 1 | 1 | 1 | 1 | .. | .. | 10 | 10 | .. | .. | .. |
| Epistaxis | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 2 | 2 | .. | .. | .. |
| Fevers | 6 | 3 | 4 | 1 | 5 | 4 | 2 | 6 | 3 | 12 | 10 | 9 | 66 | 63 | .. | 1 | 2 |
| Fractures | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | 1 |
| Gonorrhœa | 4 | 2 | 2 | .. | 2 | 1 | 1 | 2 | 1 | .. | 1 | 1 | 20 | 17 | .. | .. | 3 |
| Hepatic Affections | .. | .. | 2 | 2 | 1 | 1 | .. | 1 | 2 | .. | .. | 1 | 13 | 12 | 1 | .. | .. |
| Inflammation External | 3 | 3 | 2 | 2 | 6 | 1 | 2 | 1 | 1 | 1 | .. | 3 | 25 | 23 | .. | .. | 2 |
| —— a ——Cephalic | .. | .. | a | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. | .. |
| —— a ——Thoracic | .. | .. | 1 | 2 | .. | .. | .. | .. | 1 | .. | 4 | 1 | 9 | 7 | .. | 1 | 1 |
| —— a ——Abdominal | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Odontalgia | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. | .. |
| Ophthalmia | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Rheumatism | .. | .. | 1 | .. | .. | .. | 1 | 1 | .. | 2 | .. | .. | 5 | 5 | .. | .. | .. |
| Small Pox | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 1 | 1 | .. | .. |
| Spasms of Stomach | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Splenic Affections | 3 | 1 | 2 | 1 | .. | .. | 1 | .. | .. | 2 | .. | .. | 10 | 10 | .. | .. | .. |
| Sprains | 1 | 1 | 1 | 2 | 1 | 2 | .. | .. | 3 | .. | 1 | .. | 12 | 12 | .. | .. | .. |
| Syphilis | 1 | 1 | 1 | 1 | 2 | 3 | 4 | 16 | 6 | 4 | 11 | 9 | 59 | 53 | .. | .. | 6 |
| Urinary Affections | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Ulcers | .. | 2 | 2 | 3 | .. | 2 | .. | 1 | 2 | .. | .. | 1 | 14 | 13 | .. | .. | 1 |
| Wounds | 1 | 1 | 2 | 3 | 3 | 6 | .. | .. | .. | 1 | 4 | 3 | 24 | 23 | .. | .. | 1 |
| Total of each Month | 29 | 30 | 24 | 29 | 31 | 28 | 8 | 36 | 23 | 30 | 36 | 39 | | | | | |
| Total Cases treated during the year | | | | | | | | | | | | | 353 | 328 | 3 | 3 | 19 |

Average daily number of Sick 14.65
Do. Do. Strength of Troop 103.28
Do. Do. percentage of Sick 14.18

## Medical Diseases.

*Cephalalgia.* — Of the cases under this head, three were of a neuralgic nature; the rest were the consequences of drunkenness.

*Intermittent Cephalalgia.* — In this disease quinæ disulphas or cinchona was given in exactly the same way as in intermittent fever, and with equal success.

*Cholera.* — In the instances in which it occurred was attended with severe spasms chiefly affecting the lower extremities. All the patients were of intemperate habits and in each case the attack followed a debauch; one case proved fatal. The treatment in this disease was directed to excite the heart and arteries to the due performance of their functions, so that arterial blood might be prepared and carried through the body. To attain this, powerful stimulants were employed to act on the depressed nervous system, but as preliminary measures, the irritability of the stomach had to be allayed to enable it to retain the medicines, the heart had to be relieved from the oppressed and gorged state which would prevent its contracting on its contents with sufficient vigor, even if brought under the influence of stimulants, and the congestion of the pulmonary circulation had also to be relieved. To accomplish the first of these objects a pill of about two grains of opium was given and with a view to the second and third, blood was taken by venesection to the extent of a pound and a half or two pounds, stimulants were then administered, and ammonia was the one chiefly used on account of depressing effects not following its exhibition even when given in large quantities. It was given in the form of its aromatic spirit or of liquor ammoniæ the first, in doses of ʒiss. to ʒii. and the latter in equivalent quantities and made into a draught with camphor mixture, the dose was repeated half hourly, or hourly and on the mitigation of the disease was diminished in strength and in frequency of repetition. As external adjuvants, sinapisms were applied to the epigastrium, the insides of thighs and the calves of the legs: hot bottles, and dry frictions were also employed.

*Delirium Tremens.*— Neither of the cases of this disease was severe. The treatment was antiphlogistic with the frequent affusion of cold water in a small stream from a height on the head.

*Diarrhœa.* — Some of the cases were nearly allied to dysentery.

*Dysentery.* — One of the men admitted in January had suffered long from this complaint and it was on a chronic state of the disease that the acute attack for which he was now treated supervened; on its again subsiding into a chronic state he was sent for change of air to Poona. The dysentery which prevailed in February and again after the commencement of the rains, was characterized by frequent scanty stools with much tenesmus and tormina. The dejections were slimy or gelatinous and more or less bloody; there was considerable tenderness of abdomen, generally in the iliac regions. The circulation was seldom accelerated, but the pulse was quick in the beat and not readily compressed; thirst was urgent. In treating these cases the chief reliance was on the use of the lancet at the commencement; bleeding from the arm was practised until the pulse became soft and all appearance of blood was gone from the dejections. Each bleeding was performed with the patient sitting, or in the semi-recumbent posture, and the blood was allowed to flow until slight faintness was induced; thus from two to three or even four pounds (and in one instance as much as five pounds) were taken at first and the bleeding was repeated once or oftener if necessary. Then leeches were applied to the abdomen until all pain and tenderness from pressure were removed, and hot fomentations were used frequently in the course of each day; from these the patient experienced great relief from tormina, and they aided materially in the removal of the disease. Purgatives were given daily in these cases, and ipecacuanha in small doses, every two hours, uncombined. This last medicine had not a very marked effect, but did appear to render the motions more feculent; opiate enemata were sometimes used. The cases which were admitted during the hottest weather, differed in character from the above mentioned, the motions were more liquid and copious, and an equally free use of purgatives did harm; bleeding, leeching and fomentations, were employed, and the continued use of the infusions of rhubarb, gentian and ipecacuan, was beneficial. In such cases and in the chronic form of the disease, I have seen ipecacuan in doses of twelve or fifteen grains, combined with three or four grains of opium, given once or twice a day, do much good. These cases were more tedious than those which occurred in the cold weather.

*Fevers.* — Have been chiefly intermittents of the tertian type; there have been however some remittents of considerable severity. An emetic was administered and was followed by a purgative, and during the presence of pyrexial symptoms, the patient took saline diaphoretics. In some cases the lancet or leeches were required from the

severity of the fever or the appearance of local symptoms; on future fever days, quinine or cinchona was given, the former in doses of four or five grains, the latter of 3ii, about four hours before the time of the expected paroxysm and repeated hourly until the usual time of accession of fever had gone by. If the fever was tertian, no medicine with the exception perhaps of a purgative, was given on the intervening days. This treatment almost always at once cut short the fever and when two successive accessions were prevented, the cure was usually considered completed. In two cases venesection in the cold fit was tried, but unsuccessfully; such has been the treatment of intermittent fever.

*Hepatitis.* — In this disease the treatment consisted in subduing the inflammatory action in the liver and in removing its consequences. Depletion by means of the lancet, leeches, and mercurial purgatives, was employed. In venesection, the object was to lessen the momentum of the blood not to induce syncope; in combining mercury with the purgatives, the intentions were to aid in the removal of congestion in the liver by exciting increased secretion, and by bringing the system slightly under its influence, to promote the action of the absorbents that they might remove interstitial deposits resulting from the inflammation. After depletion had been carried as far as seemed to be beneficial, counter irritation by blisters was had recourse to. A case of abscess of the liver, terminated fatally; one of the two cases which accompany this report is of hepatitis.

In my cases it may be observed that the quantity of blood abstracted by leeches is noted, this I ascertained by having them weighed before their application; and after they had fallen off. As the capacities of leeches vary much I found it useful to note this, for it enabled me to determine with greater accuracy the number of those then in use which ought in any case to be applied, and although the effect produced on the disease is for the most part the best criterion of the propriety of their repetition, it was satisfactory and not altogether useless, to know how much blood a patient had already lost during the treatment.

Having for many months kept notes of the weight of the leeches applied in Hospital and the blood which they took, I find that the latter is always nearly in proportion to the former, whereas the proportion which the blood taken bears to the numbers applied, varies according to the numbers of times the leeches have before been used. I now therefore generally prescribe them by weight instead of by numbers, as from my observations I find it a much more accurate way of

performing depletion by them. According to the memoranda kept, they take four or four and half times their own weight of blood, so that if ℥iv. be ordered to be supplied, I expect from ℥xvi. to ℥xvii. to be taken by them. The leeches which have chiefly been the subject of my observations are obtained by the leechman from Ahmednuggur, but are I believe originally brought from Burhampoor.

*Thoracic Inflammation.* — These were all cases of catarrh excepting one in which there existed disease of the lungs of long standing. The patient was sent to the sea coast and a statement of the case was then furnished.

*Small Pox.* — This disease was very prevalent during the last cold season in the town of Sholapoor and among the natives in the cantonment. In one hundred and sixty-two cases among them, of which I had intelligence, but which did not come under medical treatment, twenty-five proved fatal; the deaths thus being 15.43 per cent. Of the two cases which occurred among the Europeans of the troop one was modified by previous vaccination. The other patient had not been vaccinated and in him it was confluent and ended fatally on the twelfth day.

*Spleen Disease.* — The means used to remove this disease were chiefly purgatives and leeches, and vegetable bitters with chalybeates. In one of the cases treated, there was severe inflammatory disease of the viscus which required repeated venesection and the very free use of leeches; the recovery was slow, but perfect. In course of the disease the liver became affected. In treating the hepatic disease, five grains of calomel had been twice given combined with purgatives, when the mouth became sore. I had before seen inflammation of the liver supervene on that of the spleen. In most other cases, the affection of the spleen was combined with some other complaint. In some the spleen was in a chronic state of enlargement which resisted all attempts to reduce it, many of the men of this troop have enlarged spleens which give them little or no uneasiness until they have a fresh attack of fever. Of the remaining medical cases in the table, there are either so few under each head or they are so trivial as not to furnish sufficient grounds for remarks.

### SURGICAL CASES

*The Externa. Inflammations* where chiefly boils and buboes

*Epistaxis.* — In these cases the bleeding was checked by cold applications, in both cases it was combined with, and probably, depended on enlarged spleen.

*Fracture.* — The only case which happened, is a compound fracture of the humerus from the bite of a horse, the muscles are injured and it is yet doubtful if the man will recover the perfect use of the arm.

*Gonorrhœa.* — The cure in the disease was affected by cubebs in doses of ʒii. thrice a day or balsam of copaiba. If the running continued long, bougies were passed and astringent injections used.

*Syphilis.* — There were only two cases of secondary disease among these. The treatment in the primary cases has been to give blue pill so as slightly to affect the mouth, the patient being kept on low diet.

*Contusions, Sprains and Wounds* — were for the most part unimportant injuries which were received in drunkenness. One case of wound was of a serious nature, the patient losing an arm and the sight of an eye besides being burnt and wounded in the face. The accident occurred at the annual review at Sholapoor when the man was ramming a gun. Amputation above the elbow was performed by the double flap operation as soon as possible after the injury. The man has been sent before the invaliding committee.

In practice among the natives connected with the troop but few medical cases of importance occurred. There were two cases of intermittent cephalalgia which readily yielded to cinchona, and a case of paralysis which recovered. Among the surgical cases, there was one of fracture of the patella and three of fracture of the radius which were treated by position only, and it answered well at least as long as the cases were under observation, two however went away before the cure was completed. I may mention also two cases of amputation of a finger and a case of necrosis of one side of the inferior maxilla in a child eight or nine years old. It was consequent on small pox, on the dead bone separating which it did in two and half months from the commencement of the disease, the new arch of the jaw was tolerably firm.

In obstetric practice, I removed from the uterus of the wife of a gun lascar, a firm fibrous tumour weighing two pounds ten ounces.

There was a case of puerperal convulsions and one of arm presentation in which turning was performed.

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## REPORT FOR 1839.

In the subjoined* statement of the strength and number of sick I have included only those actually belonging to the first troop that it may strictly be a record of the troop.

In the following table I have, however included all who have been attached belonging to the other troops, viz. recruits for the 2d at Deesa, and sickly men belonging to the 3d and 4th troops who were either left behind or sent from the field. The proportion of sick is in consequence larger.

* *Stationed at Poona.*

Strength 110.

| | |
|---|---|
| Included in the returns | 103 |
| Absent beyond the Division | 7 |
| Total | 110 |

*Number of Sick.*

| | |
|---|---|
| Remained on 31st December, 1838 | 19 |
| Admitted in 1839 | 301 |
| Discharged | 308 |
| Died in Hospital | 3 |
| Remaining on 31st December, 1839 | 9 |
| Average daily number of sick for the year | 14.99 per cent. |
| " " " of convalescents | " |
| Died without receiving medical treatment | 1 |

*Changes since 31st December, 1838.*

| | |
|---|---|
| Recruits joined | 10 |
| Discharged from the service on account of disease | 0 |
| Discharged from the service for other causes | 0 |
| Invalided | 1 |
| Pensioned | 3 |

*The following Table shows all the diseases which were treated. Of these more than one sometimes occurred in the same patient.*

| Diseases. | January. | February. | March | April | May. | June. | July. | August | September. | October. | November. | December. | Total treated. | Cured. | Died | Sent for change of air or invalided. | Remaining under treatment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cardiac disease | .. | .. | 1 | .. | .. | .. | .. | 4 | .. | 2 | .. | 1 | 8 | 7 | .. | .. | 1 |
| Catarrh and cynanche | .. | 2 | .. | .. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | .. | 9 | 8 | .. | .. | 1 |
| Cephalalgia | 1 | 2 | 4 | .. | 1 | .. | 1 | 4 | 2 | .. | 1 | .. | 16 | 16 | .. | .. | .. |
| Cholera spasmodica | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | 2 | 2 | .. | .. | .. |
| Colic | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 3 | 3 | .. | .. | .. |
| Cutaneous disease | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 2 | 2 | .. | .. | .. |
| Delirium Tremens | 1 | 2 | 1 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 5 | 5 | .. | .. | .. |
| Diarrhœa | 1 | 2 | 1 | 2 | 1 | 4 | .. | 1 | .. | .. | 1 | 1 | 14 | 14 | .. | .. | .. |
| Dislocation | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Dysentery | 2 | .. | 2 | .. | 2 | 4 | .. | 6 | 2 | .. | .. | .. | 20 | 19 | .. | 1 | .. |
| Dyspepsia and Gastro-enteritis | .. | .. | .. | 1 | 2 | 1 | .. | 1 | .. | 2 | 3 | 1 | 11 | 10 | .. | .. | 1 |
| Erysipelas | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Fevers | 8 | 7 | 4 | 4 | 5 | 8 | 10 | 11 | 6 | 6 | 2 | 1 | 72 | 71 | 1 | .. | .. |
| Fractures | .. | .. | 1 | .. | .. | 1 | .. | 2 | .. | 1 | .. | .. | 5 | 4 | .. | 1 | .. |
| Gonorrhœa | 2 | 2 | 5 | 4 | 3 | 2 | .. | 3 | 1 | 2 | 2 | 2 | 28 | 27 | .. | .. | 1 |
| Hepatitis | 6 | 4 | 8 | 3 | 2 | 1 | 2 | 3 | 2 | 1 | 3 | 3 | 38 | 36 | 1 | .. | 1 |
| Hœmorrhoids | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. | .. |
| Opthalmic diseases | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | 3 | 3 | .. | .. | .. |
| Odontalgia | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Paralysis | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 2 | 1 | 1 | .. | .. |
| Phlegmon Paronychia and Bubo | .. | .. | .. | 2 | .. | .. | .. | 2 | .. | 1 | 2 | 2 | 9 | 8 | .. | .. | 1 |
| Poisoning | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Pulmonic diseases | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 3 | 2 | 1 | .. | .. |
| Rheumatism | .. | .. | 1 | 1 | .. | 1 | 3 | 1 | 1 | .. | .. | 1 | 9 | 9 | .. | .. | .. |
| Spleen | 3 | .. | 1 | .. | .. | 1 | 2 | .. | .. | .. | 1 | 1 | 9 | 9 | .. | .. | .. |
| Sprains | 1 | .. | 1 | 1 | 3 | .. | .. | .. | 1 | 1 | 2 | .. | 10 | 10 | .. | .. | .. |
| Syphilis | 7 | 2 | 1 | 4 | 9 | 8 | .. | 3 | 5 | 5 | 3 | 2 | 49 | 49 | .. | .. | .. |
| Tænia | .. | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Testis retroactus | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Ulcers | 3 | .. | 4 | .. | 3 | 3 | .. | .. | 2 | 3 | .. | 1 | 19 | 19 | .. | .. | .. |
| Urinary Affections | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 2 | 1 | .. | .. | 1 |
| Wounds Contusions | 1 | 1 | 1 | 2 | .. | 3 | .. | 1 | 2 | 3 | 1 | 4 | 19 | 17 | .. | .. | 2 |
| Scorpion Sting | | | | | | | | | | | | | | | | | |
| Total each month | 37 | 25 | 43 | 25 | 35 | 41 | 29 | 47 | 26 | 31 | 25 | 22 | | | | | |
| Total Cases treated during the year | | | | | | | | | | | | | 375 | 360 | 4 | 2 | 9 |
| Average daily Sick per-cent during the year 1".47 | | | | | | | | | | | | | | | | | |

The sick list has been heavier during this year, than the last among the men of the first troop even without including the attached sickly men from other troops. The following are some of the causes viz. the heavier duty the men have had at Poona and the greater inducements to leave the barracks in the sun. It is difficult to say, whether their intemperance has been greater here or at Sholapoor; at neither station have any amusements been provided for them unconnected with the canteen.

There has been a larger proportion of visceral disease requiring active and longer treatment, and the hospital here is far inferior to that at Sholapoor. It has two wards with floors scarcely raised above

the level of the ground; they are both open to the east and the west leaving thus generally a high wind blowing through them; the windows are ill contrived for ventilation opening only perpendicularly. There was until lately no fence whatever round the hospital to prevent the patients obtaining improper food and drink, an additional sentry was obtained for a very short time, but the other duties of the troop being heavy he was soon removed. Lately I have got a prickly pear fence planted to protect the back of the hospital; but it will be a long time ere it proves a fully effectual barrier.

### Prevailing Diseases.

*Hepatitis.* — Has been the most prominent disease. The number of cases is nearly thrice as great as during the preceding year, and about six times greater than is recorded any previous year that the troop was stationed at Sholapoor. The exciting cause of this disease has often, though not always, been intemperate drinking; I am unable to state any other particular exciting cause. Bowel complaints bear nearly the same proportion to the general sickness that they did last year. Affections of the heart have increased from one to eight; with the exception of two cases they all followed hard drinking.

In noticing the various diseases that have occurred there is but little regarding their treatment that I have to add to what I stated in my last annual report.

### Medical Practice.

*Cardiac Disease.* — In all the cases there was pain more or less severe in the left side of the chest; tightness across the upper part of the chest; palpitation, oppression of breathing and cough, and sometimes sputa tinged with blood. Six of the cases evidently were caused by hard drinking; in one this cause was doubtful, and in one the disease arose from cold caught while in hospital. The treatment followed was depletion by venesection or leeches, and purgatives; the use of sedatives chiefly tartar emetic and digitalis, and counter irritation. In one of the patients, an old worn-out soldier depletion was inadmissible.

*Cephalalgia.* — Three cases were neuralgic and remittent, and were treated with quinine. With the exception of two, the rest were the consequence of intemperance. In these, depletion and cold local applications were used.

*Cholera Spasmodica.* — Both cases were treated with stimulants internal and external without venesection. They were both rather weakly men.

*Delirium Tremens.* — In all, the chief remedy was frequent and long continued affusion of cold water on the head.

*Dysentery and Diarrhœa.* — The character of the former disease as it occurred in the hospital are the same as it presented at Sholapoor. The same treatment has been followed in nearly all the cases, in a few I tried the effect of large doses of ipecacuan. combined with opium with partial success. One patient in whom chronic dysentery supervened on hepatitis, has been sent to Bombay for change of air. The greater number of bowel complaints occurred during the rainy season which commenced early.

*Dyspepsia and Gastro-enteritis.* — Except one case of dyspepsia all admitted under these heads, brought on their sickness by drunkenness; alkaline combined with sedative medicines were given at first, and afterwards vegetable bitters were sometimes given conjoined with neutral salts or alkali.

*Fevers.* — Of the seventy-two cases recorded twenty-nine were *quotidian*, twenty-six were *tertian*, six *remittent*, five *ephemeral*, three *continued* one *quartan* and two *eruptive* of an anomalous kind. There have been very few fever cases since October. Towards the end of the rains the fevers were chiefly tertian whereas previous to that time quotidians were most common. Among those of the continued and remittent types, were some of great severity and one proved fatal in March: death was preceded by passive hemorrhage.

The *eruptive* fever of which two cases occurred, is remarkable for the presence of numerous small dull red spots, hard and slightly elevated appearing on the trunk, face and extremities, either at the very commencement of the fever or after one or two days. The eruption is unattended with any heat, itching or other uneasiness, it gradually fades away without desquamation disappearing last from the extremities, about a fortnight or three weeks after its first appearance.

The fever is in general severe, either continued or remittent: with pains in the limbs, chiefly in the legs and feet, accompanied with some loss of power in them. When the pain is referred to a joint, no swelling or disproportionate heat is perceived in it. The con-

tinuance of the fever varies from a few days to about two weeks. I have in two years met with six cases of this disease, of which two were at Sholapoor and four at this station. Of the six, two occurred in the cold season, two in the hot and two in the rains. One patient was an officer, another a lady, and four were soldiers, treated in hospital. A case illustrative of this fever accompanies this report.

*Hepatitis.* — The cold weather has been most productive of this disease. In the many cases which have come under treatment during the year, I have steadily followed the plan recorded in my last annual report. In one case which afterwards ended fatally, I opened an abscess in the left lobe with the lancet. The patient had long been subject to attacks of hepatitis and on this account was left behind when his troop went on service. The substance of the liver in the neighbourhood of the abscess bore marks of long continued disease. The case of a foot artillery-man sent from Bombay with abscess of the liver, who died in the hospital is worthy of notice, although he does not properly come within the subject of this report. The tumefaction in the side gradually disappeared and after his death the abscess was found nearly empty and two hepatic ducts communicating with it were found carrying pus to the duodenum.

*Paralysis.* — One patient lost the power of his arm for a short time after hard drinking. The paralysis of the other was caused by disease of the brain and ended fatally.

*Poisoning.* — The patient had taken by mistake in the barracks some saltpetre instead of salts, an emetic was all that it was found necessary to give.

*Pulmonary Disease.* — The only case it is necessary to particularize, is the fatal one of Phthisis Pulmonalis. The patient had been unwell for several years and is mentioned in last report as having been sent to the seacoast, he was unable to do any duty on returning.

*Rheumatism* — It only occurred in a chronic form.

*Spleen.* — Several of these cases were of an acute nature and not preceded by fever. In these depletion by leeches and purgatives was the remedy used. In the chronic cases the treatment stated last year was followed.

*Tænia.* — The treatment in this disease which I follow and find quite effectual is the exhibition of a strong decoction of the bark of

the root of pomegranate in divided doses on an empty stomach in the morning, having the night before given a full dose of ol: ricini. The worm is expelled dead. In one of these cases a tænia lata and tænia solium were discharged from the bowels together.

In my last annual report, I stated that in employing leeches, I prescribed them by weight instead of by number, having found that the blood they took bore a steady proportion to their weight. This mode of prescribing them I continue invariably to follow, and I find it most valuable as I can regulate the quantity to be abstracted in topical bleeding with nearly the same precision as if the lancet were used.

### Surgical Practice.

*Fractures.*—One of the five was an old fracture of the leg in a man belonging to the 4th Troop. Of the other four one was a compound fracture of the pelvis from the kick of a horse: active treatment was required to subdue the abdominal inflammation that followed, owing to displacement of the fractured portion of the ilium the power of motion of the thigh was impaired; he has in consequence been sent before the invaliding committee. Another fracture was of the patella also from the kick of a horse, it was comminuted, but happily with very little displacement of the fragments. It was treated by position. The patient recovered the perfect use of the limb. A third was fracture of a rib received in falling against the corner of a cot. The treatment consisted in preventing the motion of the ribs by means of a broad bandage round the chest. General and topical bleeding were required. The fourth was fracture of the ossa nasi.

*Dislocation.*— It was dislocation of the scapular end of the clavicle and was received in wrestling. The man was thrown over the head of his antagonist and in falling headlong his shoulder struck against the edge of a cot. A bandage on the plan of Brasdor was applied but with the addition of sleeves fitting closely to the arms and extending from the shoulder straps to below the bent elbows, thus keeping the straps in the proper position. The patient was able to return to his duty between six and seven weeks after the receipt of the injury.

*Syphilis and Gonorrhœa.* — The aggregate of these cases has been nearly the same as during the former year. The only alteration in my treatment is, that I now rub the veneral ulcers freely with nitrate of silver, thinking that they afterwards heal more quickly.

*Testis Retroactus.* — The case which I have thus named is the only one remaining that requires to be noticed. When the patient

was at sword exercise, his right testicle was forced upwards into the inguinal canal and afterwards during severe straining, it passed into the abdominal cavity, where it remains. The man denies ever having had hernia, and a short time before the accident, I had strictly examined him previous to his being admitted to the Horse artillery.

Among the children connected with my charge, catarrhal ophthalmia and measles were for some time epidemic, both diseases I found of a tractable nature.

In practice among natives there have been very few cases of an interesting kind. Along with this report, I send the diary of a case of tetanus, treated with cannabis indica and tabacco enemata, it terminated successfully.

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## REPORT FOR 1840.

The Troop* was stationed during the greater part of the year at Poona, and while there, a very marked improvement in the health of the men was observable, the daily average of sick in hospital having fallen far below what it had been for many years.

* *Stationed at Poona nine months.*

In the Field three months.

*Strength.*

| | |
|---|---|
| Included in the returns. | 120 |
| Absent on Command, beyond the division or on leave. | 0 |
| | Total 120 |

*Number of Sick.*

| | |
|---|---|
| Remained 31st December, 1839. | 9 |
| Admitted in 1840. | 295 |
| Discharged. | 292 |
| Died in Hospital. | 6 |
| Remaining 31st December, 1840. | 6 |
| Average daily number of sick for the year. | 9.23 per cent. |
| Average number of convalescents. | 0 |
| Died without receiving medical treatment | 1 |

*Changes since 31st December, 1839.*

| | |
|---|---|
| Recruits. | 0 |
| Discharged from the service on account of disease. | 0 |
| Discharged from the service on account of other diseases. | 0 |
| Invalided. | 0 |
| Pensioned. | 0 |

N. B. — These numbers include men of the 1st Troop, only, the attached of other Troops are not included.

The number of cases of disease treated has been about the same as during 1839, but among them there were fewer requiring prolonged treatment, and a greater proportion of slight cases, such as hurts from petty accidents, &c. among the more severe diseases hepatitis and fever held the most prominent place during the preceding year, whereas during last year, from causes to be mentioned below, gastric and bowel complaints, have taken that place.

During the year 1839, of the total treated, the percentage of hepatitis was 10.13, of fever 19.20, and of gastric and bowel complaints 14.13; and during 1840, the percentage was of hepatitis only 4.04 and of fever 11.86, but of gastric and bowel complaints 24.26. Thus the proclivity to hepatitis and fever which had been contracted at Sholapoor, and of which I had occasion to make mention in my last annual report, had worn out and the men appeared to have become acclimatised in their new station.

Towards the end of the monsoon the Troop received orders to proceed to Sind on Field service, and in consequence had a draft of men from the 2d Troop to complete it to 120, and replace some sickly men who were not then in a state for active service, and some whom it was thought necessary to bring before the annual invaliding committee.

On the 2d October, we marched from Poona towards Bombay, taking with us a draft 33 men for the 4th Troop, which we were to meet in Sinde, our march as far as Kandala was not attended with any circumstance worthy of remark, hitherto we had fair weather with a temperature about equal to that of Poona, and only a little increase of humidity in the air.

On descending the Ghat, the temperature as indicated by the thermometer increased a good deal and to the feelings it was oppressive owing to the atmosphere containing much more moisture as was ascertained by the hygrometer. Many of the men were now affected with diarrhœa and applied for medicine, three of those who did not apply at first for medicine were afterwards admitted for dysentery in which the diarrhœa had terminated.

On the 9th October, we arrived at Panwell where we were to embark the guns and heavy baggage for Bombay, and then we were to march thither by Tannah, but it was found that the route was impracticable at that season as there was no road through the flooded rice fields. Ere this was ascertained, however, the men's beds had been sent off, and only a carpet to lie on and his cloak to cover him had been kept for each, and no boats were ready for the transport of the men and horses to Bombay.

The weather which had been fair with only an occasional light shower, now changed, and for three successive nights we had thunder storms with very heavy rain. The tents continued wet and the clothes of the men were either wet or damp, the soft ground on which we were encamped, had become muddy and no straw was procurable to lay on the floors of the tents. From exposure to the inclemency of the weather during the night between 11th and 12th October, six men were admitted with symptoms of disease simulating cholera, and one with pericarditis. On the 12th October, the Troop with the exception of the sick, crossed the harbour and I removed the hospital to a shed on the bunder to wait for the boats which took us to Bombay on the 13th.

From what I saw at this time at Panwell, and during a march in the middle of the monsoon with recruits between Kandala and Poona, and also what I have seen at Poona of the consequences of marches from Panwell, to that station during the monsoon, I am convinced that a great saving of life would be effected by the erection of pendals at each halting place for the accommodation of troops. That this would not ultimately be an additional expense to Government, but the contrary from the saving in the wear and tear and the carriage of tents, has I believe been shown by Captain Sinclair, Commissary of Ordnance Stores at Poona.

It ought to be insisted on that the tarpaulings which are allowed should be taken to protect the bedding from rain on the march; the mat coverings of the carts of the country being insufficient during the heavy rain that falls in the monsoon; the roofs of the dhoolies also require to be better painted than they usually are, to render them water tight.

In Bombay the Troop was quartered in Fort George barracks and as is usual among soldiers, the meeting of old comrades was made the occasion of drunkenness, and from this followed eventually grievous consequences.

It is thought necessary to send two or three European soldiers in each native boat in charge of the troop horses put on board it, thus a large portion of the corps is removed from all medical aid for a period of two or three weeks, and for this the debaucheries of the short time spent in Bombay render the men ill prepared. Of those sent on this duty on the present occasion, one died of delirium tremens, two or three days after leaving Bombay, and some of the severest of the cases which filled the hospital at Kurrachee had their beginning at sea. After the horse boats were de-

spatched the remainder of the Troop embarked on board a Steamer with the families of the sepoys of a native regiment, in all there were about 300 persons for whom there was no other accommodation than a crowded and wet upper deck, and even for the sick there was at night but the scanty shelter of a boat's awning to protect them from the spray and dew, the danger of fire rendering it necessary that the larger awnings should be furled. Although we had favourable winds we were five days in reaching Kurrachee, owing to the Steamer having in tow two large native boats with the battery, camp equipage and stores. During this voyage one man had a severe attack of pneumonia and another who was convalescent from fever, had a relapse which proved fatal after our arrival at Kurrachee.

We were a month at Kurrachee, during which time the men lived in the slight temporary barracks, and the severe cases among the sick were received into the ill constructed foot artillery hospital, the less severe cases remained in the tent. The mean of the daily minima by thermometer was 59° and of the daily maxima 89° Fahrenheit, after 12 or 1 o'clock a south-westerly breeze began to blow, it gradually veered to north-west and about 9 or 10 o'clock at night, after a short lull the land wind set in gently from the north-eastward and continued until about 11 A. M. or noon, gradually increasing in strength. The atmosphere during the north-easterly wind was very dry.

After our arrival the number of sick gradually increased and dysentery was the most formidable disease, it proved fatal in two cases just before the Troop marched, and two others were left in the depot hospital of H. M. 40th Regiment, in a nearly hopeless state, and I have since heard of their deaths. The two who died in the Troop hospital, had each several small abscesses in the liver, both the patients were hard drinkers, and one had come up in a horse boat where the disease commenced insidiously. In one of the two cases that were transferred to the hospital of the depot of H. M. 40th Regiment, acute symptoms of hepatitis came on, when dysentery of a sthenic character had been subdued; in the other, symptoms of invagination of the intestine in the neighbourhood of the cœcum existed. A few cases of acute disease of the lungs also occurred during our stay.

At the end of November, we marched from Kurrachee for Upper Sinde, and as we had to pass through a country almost uninhabited and devoid of supplies, a large commissariat accompanied us for which camels were the only carriage, six of these animals were given to the hospital with kudjavas for the sick.

Our road at the commencement lay to the north-eastward over

an uncultivated level plain rather thickly covered for the first ten miles with large euphorbia bushes, capparis and zizyphus and some galega; on our left were some low hills, which on examination, are found to be curiously disposed in five somewhat concentric ridges with abrupt inward faces, while outwardly the strata are inclined at angles varying from 25° to about 80°.

In a central basin are the Thermal springs. On my visit to them while the troop was at Kurrachee, I found the heat of one spring, that which flowed into thes wamp famous for the hundred of alligators that inhabit it, to be 98° Fahrenheit, another at some distance, which followed into a reservoir was 119° and near it, issuing from a coral rock, was a small stream at 129°. I took away with me some of the water for analysis and found it contained nothing but a minute quantity of saline matter, chiefly chloride of sodium — it differed from the well water at Kurrachee only in temperature.

The plain over which our road lay ended at a low range of hill called Hola about four hundred feet high. The euphorbia nearly disappeared except at places where the soil was poor, it was replaced principally by mimosas. The surface of the plain was in many places incrusted with salt, and the water was often so brackish as to be unfit to drink. On crossing the low range we entered the Jubbul Moolk or Hilly country. Our fourth encampment was in a confined spot on the Kudajee river, where it passes through a narrow ravine between the Hala and another low range which approaches it forming an angle; here we halted a day.

The weather on the plain had been similar to what we had experienced at Kurrachee, but here in the morning we were enveloped in fog and had heavy dew, and during the day the air was close and moist. A general tendency to diarrhœa showed itself, and there were several applicants for medicine: one man was admitted with dysentery.

At this encampment many of the camels became sick and died, the same had occurred here to the camels of the troops who had marched before us, and it had been noted in the route furnished to us that they had died from eating some poisonous plant. Among others a fine camel of my own was taken ill and in the undigested food he vomited, I found the leaves of the nerium odor which satisfied me as to the cause of the mortality. The oleander grows very abundantly on the bank of the Peeperee and Kudajee rivers along with the tamarisk on which the camels feed. The sickness generally showed itself first in the animal refusing its grain and water, vomiting then came on and usually continued until death; there was hanging of the lower lip and heaviness and vacancy of the eye;

the abdomen became distended; the breathing was interrupted as if by gulping or gasping; the excretions were not suppressed, sometimes there was purging; the animal had disinclination to move and on being made to rise there appeared to be vertigo, it staggered and sometimes fell; at last it died in convulsions, after a period varying from a few hours to a day or two. I examined three of the poisoned camels, and found in two, the mucous membrane of the omasum inflamed, and in the third the inflammation had affected the reticulum, the omasum and the abomasum. In each of the three camels I found the lungs to contain hydatids; in two they were numerous and as large as limes: in the other there was but one large one — these I considered unconnected with the cause of death.

Some horses also had been poisoned here, although all of ours escaped, perhaps through the care that was taken to pick out the dry oleander leaves, which were brought in with the grass. In places where the oleander grows so abundantly, the forage for the camels ought to be cut and brought in to them.

After leaving the Kudajee river, the asclepias gigantea takes the place of the nerium on the banks of the streams, and the general appearance of the vegetation changes. — A different species of mimosa appears, and we now meet with the light green drooping piloo of which the camels are so fond; the water has less saline matter; the hills become more lofty; they are of varied outline, some are tabular, others gently rounded or crenated, serrated or peaked; they are much intersected with chasms and frequently have precipitous sides which sometimes disclose the strata to be arched.

These hills are of limestone and contain myriads of testaceous cephalopodous mollusca chiefly polythalamous, and indeed fossil remains of these animals form a great proportion of the mass of the hills among which we passed, some of which, such as Kambhoo and Keerutter are three or four thousand feet high. The most common genera of these cephalopoda are the nummulite, siderolite and the scaphite, the remains of echinodermata, also and a few testaceous gasteropoda are found in the rock, and at some places as at Pakuw and Mulleeree, gasteropodous and conchiferous mollusca abound in lower hills overlying the bases of the mountains, and in these the limestone is argillaceous, but here again there are strata almost entirely composed of cephalopoda, and these strata alternate with a soft calcareous sandstone devoid of organic remains.

After crossing the dry bed of the Muraee river close under Kambhoo, we entered the narrower valley of the Baroon river, where the Brahoo country commences, having on our right the extensive jut-

ting range which forms the western boundary of the lower plain of the Indus.

The bottom of the valley now contained much shingle similar to the neighbouring rock and but little rounded, mixed with alluvium, and in it were seen partly exposed large petrified trunks of dicotyledonous trees of different genera, and fragments of these were plentifully scattered on the surface of the ground for several miles. It appeared as if the trees growing in the valley (and it may yet be found the animals inhabiting it also) had been overwhelmed with the detritus swept from the surface of the neighbouring mountains, probably by the waters of the deluge. The trees thus buried had become petrified by the long continued percolation of water saturated with carbonate of lime and the superincumbent alluvium having been gradually washed away, they have become exposed, the mountains are again covered to their summits with similar detritus.

At Mulleeree the waters begin to run to the northward. The second march from thence we emerged on the upper plain of the Indus, the hills gradually diverging. On the right the Dharun range (called "Lukkee" in the maps) in which the jutting range terminates runing towards the river at Sehwan, and the comparatively low Budrow overtopped by the loftier Keerutter range continuing its northerly direction.

During the twelve days that were spent in marching among these mountains from Kudajee to Roree on the plain of the Indus, there were but two admitted into hospital, one for a kick from a horse, the other for gastrodynia caused by cold. On coming to the plain we found the daily range of the thermometer much greater than it had been in the mountainous country, and the cold during the march in the morning (sometimes near the freezing point) was much felt and several had attacks of gastrodynia.

We marched on the right side of the Arul river over part of the dry bed of the Munchur lake, and parallel with the Nara rivers over a fine alluvial plain, intersected by former water courses and at present mostly overgrown with jungle of tamarisk or sounder. In many places traces of former embanked fields are visible, where the tamarisk now abounds the surface of the ground is in some places thickly encrusted with salt.

We passed through Larkana to Shikarpoor, where we arrived at the close of the year, having accomplished our march of about three hundred miles from Kurrachee in a month. Very few admissions into hospital took place during the march, this is apparently at-

tributable to the excitement of the change and the absence of the means of drunkenness.

In the following table I have as usual entered separately each case of disease that occured in hospital, even if two were present in the same individual, and in it are included the diseases of the attached of other Troops

*Table of Diseases treated in Hospital of 1st Troop H. B. during* 1840.

| Mean Temperature | 67.3 | 70.5 | 76.0 | 85.0 | 83.7 | 79.9 | 76.1 | 75.1 | 76.5 | .. | 73.9 | 65.2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean Range of Termometer. | 22.1 | 19.3 | 17.9 | 21.3 | 19.7 | 20.7 | 7.0 | 9.7 | 20.0 | .. | 30.0 | 34.4 | | | | |
| Diseases. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total Cases treated. | Discharged to duty. | Died. | Transfered. | Remaining under treatment. |
| Cardiac Diseases | 1 | 2 | 2 | 1 | .. | 4 | 1 | 1 | 1 | 1 | 1 | .. | 15 | 15 | .. | .. | .. |
| Cattarrh and Cynanche tonsil | 1 | .. | .. | 2 | 1 | .. | .. | .. | .. | 1 | 2 | .. | 7 | 7 | .. | .. | .. |
| Cephalalgia | 4 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | .. | 1 | 3 | .. | 21 | 20 | .. | 1 | .. |
| Cholera | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 | .. | .. | 7 | 7 | .. | .. | .. |
| Colica | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | 1 | .. | 4 | 4 | .. | .. | .. |
| Cutaneous Disease | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 3 | 3 | .. | .. | .. |
| Cynanche parotidæa | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Delirium Tremens | .. | .. | .. | 2 | 1 | .. | 1 | 1 | .. | .. | 1 | .. | 6 | 6 | .. | .. | .. |
| Diarrhœa | 1 | 1 | .. | .. | 1 | 1 | 1 | .. | 1 | 1 | 1 | .. | 8 | 7 | .. | 1 | .. |
| Dislocations and Sprains | 3 | 1 | 1 | 3 | 3 | .. | 2 | 2 | 2 | .. | 1 | .. | 18 | 18 | .. | .. | .. |
| Dysentery | .. | 1 | 3 | 2 | 3 | 1 | 5 | 1 | 2 | 5 | 10 | 1 | 34 | 28 | 2 | 3 | 1 |
| Enteritis | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | .. | 1 | .. |
| Epilepsy | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | .. | 1 | 3 | 3 | .. | .. | .. |
| Febris | 4 | 3 | 4 | .. | 2 | 4 | 5 | 6 | 1 | 7 | 3 | 5 | 44 | 42 | 1 | .. | 1 |
| Fractures | .. | 1 | 1 | .. | 1 | .. | .. | .. | 1 | .. | .. | .. | 4 | 4 | .. | .. | .. |
| Gastro-enteritis Gastrodynia and Dyspepsia | 1 | 1 | 2 | 3 | 2 | 4 | 4 | 1 | 3 | 6 | 2 | 4 | 33 | 32 | .. | .. | 1 |
| Gonorrhœa | 1 | 1 | .. | 2 | .. | .. | .. | 1 | .. | 2 | 4 | .. | 11 | 11 | .. | .. | .. |
| Hæmatemesis | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 | 1 | .. | .. | .. |
| Hemorrhois | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. | .. |
| Hepatitis | .. | 3 | 2 | 1 | 3 | 1 | .. | .. | 2 | 1 | 2 | .. | 15 | 13 | 1 | 1 | .. |
| Odontalgia and Otitis | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | 2 | .. | .. | .. |
| Ophthalmic Disease | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | .. | 3 | 3 | .. | .. | .. |
| Peritonitis | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. |
| Phlebitis | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 2 | 1 | 1 | .. | .. |
| Phlegmon, Bubo, Paronychia, &c. | 6 | 2 | 1 | 2 | 3 | .. | 2 | .. | .. | 1 | 1 | 3 | 21 | 19 | .. | .. | 2 |
| Pulmonic disease | .. | .. | .. | .. | .. | 1 | .. | .. | 2 | 2 | .. | .. | 5 | 5 | .. | .. | .. |
| Rheumatism | 2 | 2 | 1 | 1 | 2 | .. | 1 | 1 | 2 | 1 | 5 | 1 | 19 | 18 | .. | .. | 1 |
| Rupture of Muscle | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | 1 | .. | .. | .. |
| Spleen | .. | 3 | 3 | .. | .. | 1 | 2 | .. | 1 | .. | .. | .. | 10 | 9 | .. | 1 | .. |
| Syphilis | 2 | .. | 3 | 4 | 5 | .. | 4 | .. | 2 | 3 | 1 | .. | 24 | 24 | .. | .. | .. |
| Ulcers. Dracun.: Contu | 3 | 4 | 5 | 4 | 7 | 3 | 2 | 3 | 5 | 5 | 2 | 2 | 45 | 45 | .. | .. | .. |
| Total. | 32 | 31 | 31 | 29 | 36 | 23 | 34 | 22 | 24 | 48 | 44 | 17 | | | | | |
| Total . . | | | | | | | | | | | | | 371 | 351 | 6 | 8 | 6 |
| Average daily member of Sick 6.54. | | | | | | | | | | | | | | | | | |

In my annual reports for the years 1838 and 1839. I have entered so fully into my treatment of most of the diseases, now under consideration, that I have but little to add, I shall therefore, review shortly the more important diseases, entering into the treatment only when this has not been done before.

MEDICAL PRACTICE. The nine cases which remained in Hospital at the end of the preceding year all in time returned to their duty.

*Cardiac disease.* — The fifteen admissions for cardiac disease occurred among nine men, three having had relapses: in one of these three there was hypertrophy of the heart, and he was transferred to the foot artillery in consequence. The disease generally showed acute symptoms of pericarditis and was caused by excessive spirit drinking and exposure at the same time to wet or cold night air, thus the commencement of the monsoon was an occasion of its increased prevalence. One case only was admitted which was not caused by the abuse of spirits, and it occurred during the heavy rain which fell at Panwell when the Troop was waiting for boats.

*Cephalalgia.* Two cases were neuralgic and intermittent and were treated as usual with quinine given to anticipate the paroxysms. Two were connected with syphilis, and one of these patients, a man of the fourth Troop was transferred with other sick to the depot hospital of H. M.'s 40th at Kurrachee on the troops marching thence. Almost all the others were effects of drunkenness.

*Cholera.* Under this head are classed seven cases which approached more nearly to that disease than to any other; six of them occurred at Panwell from exposure to cold and wet, and the other just after our arrival in Bombay. The attack was sudden in its accession — there was vomiting and purging with cramp-like pain at stomach or through the bowels; prostration of strength and coldness of surface with thirst: in one case there was incipient collapse, the dejections were watery but not conjee-like; ammonia with opium were given internally; in several blood was taken from the arm; hot turpentine and blisters to the epigastrium with dry frictions to the extremities. A copy of one of these cases accompanies this report.

*Colic and Gastrodynia.* — Were generally brought on by cold.

*Cynanche Parotidæa.* — The two instances of this were in men whose children were suffering from the disease which was then epidemic.

*Delirium Tremens.*—The proportion of this disease was about the same as in former years. The treatment was the same.

*Diarrhœa.*—But eight cases are entered in the table, those being all that were admitted into hospital. But on descending the Bhore

Ghat from the Dukhun to the Konkun where the atmosphere at a high temperature was nearly saturated with moisture, a great portion of the men were affected with looseness of the bowels.

To each of twelve who applied for medicine, I gave a dose consisting of magnesia carbon. ʒij pulv: jalapœ gr. xv pulv: ipecac. gr. iss. ol: menth gtt. iij. and without an exception it removed the complaint. Three who did not at first apply for medicine were afterwards admitted for dysentery in which the disease had terminated. At Kudajee in Sinde where, as I have before mentioned, diarrhœa was common, I used the same medicine.

*Dysentery.* — One chronic case that was mentioned in last year's report as having been sent to the Presidency for change of air, returned without improvement and on our leaving Poona was transferred to the 2nd Troop and recommended to be brought before the invaliding committee. All the other cases that occurred at Poona were of the same character as I had before met with in the Dukhun and described in my reports.

The disease in the Konkun and at Kurrachee was mostly of a more insidious character and attended with less acute symptoms: in four at Kurrachee it was complicated with disease of the liver; three of these were alluded to in in the preliminary part of this paper and the fourth was long under treatment.

The remedies used were general and local bleeding, ipecacuanha conjoined with small quantities of jalap frequently repeated, or ipecacuan alone and occasional mild purgatives. In cases complicated with hepatitis, calomel was given conjoined with the ipecacuan. The case which was admitted at Kudajee and also a few at Poona were treated with ipecacuan in doses of ℈i or ʒss with tinct. opii. at bed time, and a purgative in the morning. Not omitting venesection when the disease was severe. I have rarely seen the large doses of ipecacuan retained even when tinct. opii. ʒiss has been conjoined.

*Dyspepsia and Gastro-Enteritis.* — As usual were chiefly the effects of drunkenness.

*Enteritis.* — But one case occurred, it was severe and required active general and topical bleeding. The patient was only convalescent when the troop marched from Poona — therefore was transferred to the 2nd Troop.

*Epilepsy.*—One of these cases was a relapse; both attacks followed continued drunkenness. The other patient was a recruit who had

been sent back from the 3rd Troop when in Sinde he was transferred to his Troop when it returned from service.

*Fevers.* — I have already referred to the decrease in the number of admissions under this head. One case of remittent fever ended fatally at Kurrachee. In a patient suffering from intermittent fever bloody urine was passed; during the cold fits the fever was obstinate and at last yielded to venesection during the rigors. A copy of the diary of this case is forwarded with this paper. The following shows the types of the forty-four cases of fever.

| Continued. | Remittent. | Quotidian. | Tertian. | Ephemeral. |
|---|---|---|---|---|
| 2 | 8 | 14 | 3 | 17 |

The eruptive fever which I described in my last report, I met with this year in a solitary instance and that was in a child.

*Hæmatemesis.*—The vomiting of dark clotted blood occurred on two successive days and then stopped, the man had had a fall on his back five or six days before, and he ascribed the complaint to this cause, none other was apparent.

*Hepatitis.*—The great decrease of admissions under this head has been made mention of already. The passage of biliary calculi in one case ended fatally from the violence of the inflammation it excited.

*Peritonitis.* — The patient, a serjeant, was brought to hospital in a state of collapse after having drunk during the day, fifteen drams of spirits (there are forty in a gallon). He had been rather unwell for two or three days, he died a few hours after admission.

*Phlebitis.* — One of these cases ended fatally it came on after bleeding for inflammation of the liver and was attended with severe fever. The other occurred after bleeding during the treatment of pneumonia, it terminated favourably. Constant fomentations during the day and poultices at night, and leeches, were the chief remedies used.

*Pulmonic Disease.* — There were five cases in all, viz. two cases of bronchitis, one at Poona during the monsoon, the other at Kurra-

chee in November, two cases of pneumonia, one after exposure to cold and wet at Panwell, the other from the same cause on board the Steamer, and one case of pleuritis at Kurrachee. The principal treatment consisted in general and topical bleeding in all these forms of disease, and in the free use of tartar emetic and ipecacuan in the acute stage, and when the inflammation was subdued, in blistering. All recovered.

*Rheumatism.* — All were sub-acute or chronic, I have generally treated this disease with tartar emetic in doses of ¼ or ½ a grain combined with extract of conium grain iv. or v. every four hours, in the sub-acute form, and with the same combination or with iodide of potassium and extract of conium in the more chronic form with the happiest effect. The conium is a much more efficacious anodyne in rheumatism than either opium or hyoscyamus. A little before leaving Poona, I had received from England some extract of aconite which I had few opportunities of employing, and I found it very useful, especially in a European woman suffering from acute articular rheumatism. In that case I used it uncombined and the disease yielded in a few days : the medicine caused copious diaphoresis.

*Spleen.* — Some of the cases were men who had been sent to Poona from their troops in Sinde on account of obstinate fever. Two cases were acute and required active treatment; in one of the two the man had received a blow on the spleen which had been for many years enlarged this man's general health being bad, he was unfit to accompany the troop on service. The treatment of this disease was the same as stated in former reports.

No other medical cases require to be mentioned.

Surgical Practice. — *Dislocations and Sprains.* The only case of the former was a dislocation of the head of the humerus downwards and forwards it was reduced by means of pullies. Among the numerous patients with sprains one from repeated injury to the ligaments of the ankle joint lost the free use of it and thus being unable to mount and dismount quickly he was left with the 2d Troop with a recommendation that he should be transferred to the foot artillery.

*Fractures.* — Two of the fractures were from falls on the steps at the doors of the barracks in Poona. A very abundant source of injury to the men when drunk, from their imperfect construction in not being long enough or curved backwards to meet the wall on each side of the door ; as they are at present, many fall down their abrupt side. In these two cases the bones fractured were a rib and a

fibula, the former was treated by restraining the motion of the ribs by a broad bandage round the chest. The fractured fibula only required the limb to be kept at rest. Another fracture was of the clavicle caused by a fall from horseback; the fractured ends were kept in place by Brasdor's bandage. The fourth case was a fracture of the lower jaw near the angle and also at the chin, the broken ends were kept in apposition by silk ligature tied round the teeth and a paste board splint moulded when wet to the jaw; the fracture was received in falling.

*Rupture of Muscular fibre.* — Some fibres of the right rectus abdominis muscle were ruptured in riding hard up and down the Bhore Ghat on duty when the Troop was descending. A day or two after the injury the patient suffered very severe pain. Local bleeding and rest were requisite.

*Syphilis and Gonorrhœa.* — The number of admissions for these diseases was less than half what it had been the previous year. The treatment has not been changed.

Summary of Cases — Which occurred among the troop followers chiefly natives.

*Fractures.*— One Compound fracture of ossa nasi in a ghorawala from the kick of the horse, the fragments of bone were elevated.

One simple fracture of left radius close to the wrist from a fall from horseback.

One simple fracture of right radius and ulna from a fall from horseback.

One compound fracture of eight radius and ulna from a fall from horseback.

One smple fracture of left tibia from the kick of a horse.

These four last cases were treated with splints. All terminated successfully.

One compound transverse fracture of right patella from the kick of a horse. When the man was brought to hospital the probe passed between the fragments of bone to the back of the joint. The limb was kept fully extended on a splint and thigh bent on the body. By leeches and cold lotion the violence of the inflammation was subdued. The fragments united closely and the man recovered without stiffness of the joint.

*A Gunshot wound of the ear and cheek* by a musket ball in a native boy on the ball practice ground. The meatus auditorius was di-

vided, but the integuments above and below the wound connecting the ear with the head were undivided : the wounds were rapidly healing when we left Poona.

*Poisoning with Opium.* — In a native woman proved fatal. A stomach pump was borrowed and used but it was too long after the poison had been taken.

*Tetanus.* — A case of idiopathic tetanus occurred in a native on the march to Panwell, the paroxysms chiefly affecting the muscles along the spine came on so suddenly as to throw him down while walking. He was sent back to Poona.

At Poona during the year I met with two cases of tetanus in women a fortnight after parturition, one of the patients only had had any difficulty in delivery. In one the disease ended fatally. I tried freely the extract of cannabis indica, but it had little or no effect. In the other case also I tried it for some days, giving ten grain doses of the alcoholic extract, three or four times a day without benefit, the woman then refused to take any medicine and finally the disease went off spontaneously.

*Intermittent Menorrhagia* — of tertian type in an Indo-Briton, the wife of a soldier of the troop, the complaint was cured with quinine given in repeated doses close on the expected time of return.

In Obstetric Practice. — *Presentation of the Arm.* The child's forearm had been pulled off at the elbow in forcible attempts to deliver the woman before I was called in. The patient was a native. I delivered by turning and the woman's life was saved.

*Presentation of an arm and the funis.* — Here also the child was dead, I turned the child and delivered the woman. She recovered speedily. She was a native.

*Hydrocephalus in the child and the face turned to the pubes.*—Here also I turned the child which I then found was dead; not being yet able to extract it, I lessened the head with the perforator and delivered the woman. The mother, a native, recovered soon.

*Adherent placenta removed ;* the cord had been broken short off.

*Flooding after delivery* of great severity terminated favourably

There were two patients with scirrhous disease of the uterus for whom I could do but little.

Among the children of the soldiers the epidemics of the year were cynanche parotidæa and pertussis.

*Nominal List of Men of* 1st *Troop Horse Brigade, who have died in Hospital, from* 1st *January to* 31st *December,* 1838.

| Names. | Ranks. | Present age. | | Period of service in India. | | Country. | Disease. | Date of | | Duration of disease. | | Appearance on Dissection. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Years. | Months | Years. | Months. | | | Admission | Decease. | Months. | Days. | |
| John Evans . . | Serjeant. | 37 | .. | 18 | .. | Wales. | Cholera. | 20 Feb 1838. | 20 Feb 1838. | .. | 1 | Both ventricles of the heart full of blood, some venous congestion in the lungs. The Liver was enlarged and speckled. |
| John Cherry . | Gunner | 24 | .. | 1 | 4 | England. | Small Pox | 20 Feb 1838. | 2 Mar 1838. | .. | 10 | The arachnoid membrane in part thickened and opaque. The ventricles of brain filled with serum. The lining membrane of larynx inflamed and covered with paste like matter. |
| Robert Simpson | Bombardier. | 38 | .. | 17 | .. | Scotland. | Hepatitis. | 15 Mar 1838. | 1 Apr. 1838. | .. | 17 | In concave side of the right lobe of liver a large abscess whose walls at one part bore evidence of having long existed; at other parts they were ragged and without any adventitious lining membrane. The cellular membrane round the Hepatic vessels was condensed and hard. |

*Nominal List of Men of the* 1st *Troop H. B. who have died in Hospital, from the* 1st *January to* 31st *December,* 1839.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| James Urquhart | Gunner. | 36 | .. | 15 | 10 | Scotland. | Fever. | 18 Mar | 27 Mar | .. | 10 | Thickening of arachnoid and serum in ventricles of brain. |
| Mich. Dunford | Do. | 32 | .. | 11 | 10 | Ireland. | Phthisis pulmonalis. | 28 Jan 1839. | 12 Mar | 4 Years. | .. | Right lung with tubercles in upper part. Left being nearly all destroyed by suppuration. |
| James Quinn . | Do. | 30 | .. | 9 | 3 | Do. | Paralysis. | 28 May 1839. | 11 Jul | 2½ | .. | Right hemisphere of brain had middle and posterior lobes pultaceous. |
| 4. Troop H. B. George Jones . | Farrier. | 36 | .. | 13 | 9 | England. | Hepatitis. | 28 Mar 1839. | 3 June | Unknown. | | Abscess in left lobe of liver; the neighbouring substance degenerated. |

*Nominal List of Men of the* 1st *Troop H. B. who have died in Hospital from, the* 1st *January to the* 31st *December*, 1840.

| Names. | Rank. | Present age. | | Period of service in India. | | Country. | Disease. | Date of | | Duration of disease. | | Appearance on Dissection. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Years. | Months. | Years. | Months. | | | Admission | Decease. | Months. | Days. | |
| Michael Corbett | Serjeant. | 31 | .. | 9 | 9 | Ireland. | Peritonitis. | Feb. 29 1840. | Feb. 29th. 1840. | Probably 3 | | Peritoneum covering paries and viscera inflamed, 2 or 3 lbs. of opaque serum with flakes of lymph in the abdomen. |
| John Power . . | Gunner. | 28 | .. | 9 | 1 | Do. | Phthisis. | March 15 1840. | April. 2 1840. | .. | 15 | Thickening of coats of veins of the arm and bend of elbow with close union to surrounding cellular tissue. Basilic. v pervious, median Basilic and median Cephalic, impervious, Cephalic in part containing pus the rest impervious. Lining membrane of vena cava and heart pink coloured; serum in pericardium. Serum on surface of brain. |
| Thomas Roberts | Serjeant. | 31 | .. | 11 | 1 | Do. | Biliary Calculi. | June 26 1840. | June 29 1840. | .. | 24 | Lymph effused on and in neighbourhood of gall bladder and duct; adjacent substance of liver inflamed. Gall bladder distended, its coats thick and hard; mucous lining highly inflamed and stained black contained black friable calculi. Duodenum highly inflamed. |
| John Holland . | Gunner. | 30 | .. | 8 | 6 | England. | Fever. | Oct. 27 1840. | Nov. 7 1840. | .. | 12 | There was not convenience for dissection. |
| Michael Quiloy | Do. | 45 | .. | 19 | 6 | Ireland. | Dysentery. | Nov. 18 1840. | Nov. 27 1840. | about | 22 | Peritoneal coat of small intestine inflamed a little lymph effused. Large intestines bound to neighbouring parts by lymph abscesses in their walls. Mucous membrane already separated or in sloughy patches; invagination of left end of transverse colon. Liver with corrugated surface ; two abscesses in the right lobe. |
| William Griggs | Do. | 36 | .. | 11 | 6 | England. | Dysentery. | Nov. 18 1840. | Nov. 27 1840. | about | 14 | Cæcum and ascending colon a mass of disease, tearing on being handled. Abscesses in their walls and between the transverse arch and omentum; nearly cartilaginous ring at each end of transverse arch. Mucous membrane throughout the large intestines, highly inflamed sloughy or separated; liver, enlarged left lobe adherent to diaphragm ; two abscesses in it and two in the right lobe ; greater part of substance of the liver degenerated speckled yellow and red. Both lungs adherent to pleura costalis. |

## Article IV.

*Statistical Review of the climates of the principal Stations for European Troops in the Bombay Presidency.* By R. H. A. Hunter, Esq. H. M.'s 2d or Queen's Royal.

Presented June, 1841.

The principal stations for European troops, in the Bombay Presidency, are three, the Presidency comprising the fort of Bombay and island of Colaba; Poona; Belgaum; and Deesa.

The first is peculiar for its even high temperature, the thermometer seldom rising above 88° or falling below 76°. From its low insular situation, also, near the level of the sea, its atmosphere is always moist, and particularly during the rainy season, from June to October, when it is almost impossible to keep any thing from rust or mould. The average fall is about seventy inches. During the dry months the chief wind is the sea-breeze, and during the rainy season the south-west monsoon. There is also a land breeze in the morning from November to May, but it is generally weak, and always soft and tempered. The prevailing diseases at this station, are cholera, diarrhœa, dysentery, bronchitis, hepatic abscess, and a severe kind of gastric and gastro-hepatic, remitting fever, and nearly in the order herein mentioned. From December to April, it is seldom, a European regiment loses more than two or three men. In May and June, cholera is frequent and fatal: also, in Colaba, during the first ten days of July. In May, diarrhœa is also very prevalent. In June and July, true dysentery or colitis. In July and August, bronchitis. In August, hepatic abscess; and in October and beginning of November, gastric remittent fever. Diseases of the heart and aorta are also fatal, as are all the varieties of tubercular disease in the rainy season; and in the cold weather, purpura is not unfrequent, in Colaba, at least.

The comparative mortality by dysentery, cholera and phthisis, exceeds that of any other station, whilst in most other diseases it is more than equal. Belgaum perhaps is an exception with regard to liver, and Deesa with that to fever and coup de soleil.

Our means of proof are limited, but adopting the form in Major Tulloch's statistical reports, we have framed tables 1, 2, and 3, from the mortality in the 2d or Queen's Royal Regiment, during the years 1831, 2, 3, and 6. The first from the official returns, the others con-

rected from privates notes. A comparison of these may also account for some of the discrepancies alluded to by Major Tulloch, between the reports of the medical officers, and their official returns.

The second, Poona, one thousand eight hundred feet above the level of the sea, and sixty miles or so inland, having high Ghats intervening, is comparatively dry with a much greater range of the thermometer, the extremes being 55° or under and 96° to 98°, and the average fall of rain at least two-thirds less, or about twenty inches.

The third, Belgaum, two degrees further south, two hundred or three hundred feet higher and something nearer to the Ghats, has nearly twice the quantity of rain with a lower and steadier temperature, the annual extremes being about 60° and 92°.

But what constitutes the greatest difference in these two climates, is the cold easterly winds at Belgaum in December and January, and the hot winds at Poona in March and April. During these last at Poona, a soft sea breeze blows all the afternoon at Belgaum bringing this climate to something like that of Mahabuleshwar at this season, allowing for the difference of altitude. It is however more sheltered. In the rains, Belgaum is more boisterous than Poona, and these set in and cease with greater violence, generally with tremendous thunder storms. The rains also begin a month earlier and continue a month or so later, but these consist chiefly of the thunder storms and generally towards evening or in the night.

Between the diseases incident to these climates, there is also a similarity, or rather, deducting the Poona gastric fever of October and November, those of Belgaum are only an exaggeration of the other. Bronchitis is nearly the same in both; dysentery and rheumatism are worse in Belgaum; and hepatic abscess rare at Poona, at least so the Queen's Royal found it, is frequent in the cold weather, whether during the dry or rainy season.

Tables 4 and 5 have been framed from the mortality in the Queen's Royal, at these stations, corrected from private notes. The strength may be considered too small to form a just conclusion; in respect to Belgaum, this is the case, but with regard to Poona, we have been favored through the kindness of Dr. Jackson of H. M. 6th, with an abstract of the annual mortality and strength of that regiment for a period of four years, to which we added the above two, and the five years the Queen's Royal were previously at Poona, which gave an aggregate strength of 9,731, and the annual proportion of deaths, 22.2 per 1000, instead of 21.8, a difference scarcely appreciable.

Deesa, six or eight degrees farther north, just out of the tropic, and about one thousand five hundred feet lower, being very little ele-

vated above the sea, from which it is distant about one hundred and fifty miles, partakes something of the character of both these climates, only of course with a much greater atmospheric pressure. Poona it resembles, in the hot winds and high temperature. It has less rain however than Poona, the average fall being about twelve or fourteen inches, and the annual range of the thermometer greater, the extremes being 50° or under, and 108° to 110°. It chiefly resembles Belgaum in the cold winds during December and January, but with a higher diurnal temperature, that of Belgaum being about 75° as the maximum, that of Deesa 83°.

The principal diseases met with at this station, are fevers of the remitting and well marked intermitting types, gastritis, enteritis, dysentery, cerebritis and coup de soleil. Gastro enteritis and cerebritis are generally the accompaniments of the fevers, the former in the cold, the latter at the close of the hot, season, and dysentery the sequel. True idiopathic colitis is perhaps rare.

The great mortality here is caused by the complicated fevers, of which the most fatal is the gastro-catarrhal (bronchitic) but it is also the most rare. The next is the gastro-enteric ; this is also the most frequent—and least of all, the enteric. In this last which in the cold weather, is frequently of the intermitting type, the acute pain along in front of the right cartilaginous border, the resonance of the part being plus, with tenderness, is often so intense, as to " double them up " as they express it, and even to mask the fever altogether for one or two periods.

Agues prevail chiefly in December and January, remittents at all other seasons. These last are at their acme in August and September towards the close of the rains, and are then accompanied with extreme prostration, and marked tendency to petechiæ and purpura.

The dysentery of the cold weather, enteritis and other inflammatory gastric ailments, may be compared to those at Belgaum at the same season, only at Deesa hepatic complications are rare. Coup de soleil occurs chiefly in the beginning of June. Table 6 has been framed from the mortality in the Queen's Royal at this station for one, rather bad, year, which would have been quite inconclusive had we not through the kindness of Deputy Inspector General Loinsworth and Dr. Jackson, H. M. 6th, obtained abstracts for five full years, also of the 6th and 40th Regiments, which, in all, give an aggregate strength of 4,393, and the annual ratio of mortality 49.6, instead of 55.4, a smaller difference than we had anticipated. We think however this is still too high. Looking over the tables, the difference between Deesa and Poona would seem to be caused solely by fever

and its sequels. We should say therefore, Deesa, fever, 12 (last was an unusual year); sequels, stomach and bowels, 5; brain 3; total 20. All other diseases including, dysenteric and cerebral affections *not* sequels of fever, 22, the same as Poona or Belgaum, or in all per thousand annually, 42, Deesa has hitherto, as far as I know, enjoyed nearly a complete immunity from epidemic cholera.

On a review of these climates we find that of the Presidency, the most equably warm and moist, and at the same time the most inimical to Europeans from June to December, or when the moisture is excessive, but the most healthy from December to May, or during the dry season. We except in regard to cholera.

Referring to Major Tulloch's statistical reports, the climate which comes nearest to this would appear to be some of the West India islands, or perhaps Demerara and Berbice still nearer, but for their greater moisture. Between any of these, however, and Bombay, it is impossible to draw a just comparison, owing to the very great prevalence of maglignant fevers in the West Indies. The average mortality by this class of diseases being 37 per 1000 of strength, whereas in Bombay it is certainly not more than 5. This particularly applies to the class, "affections of the stomach and bowels," the greater number of these not only in the West Indies, but even here, if we include those associated with hepatic abscess, depending upon the fevers. Indeed when we examine Major Tulloch's tables, — he mentions it himself, we find that but for the 2d, Queen's Royal in 1817 and 18, the average mortality for the twenty years would not have been one half in St. Vincent's and Grenada, and if we deduct these and another out of the way proportion in 1837, possibly from a similar cause, we have the comparative mortality in the former, 10.5 per 1000 of strength, instead of 24.2, and in Grenada 7.8, instead of 16.1 so that it would be difficult to estimate the difference.

We think after all, more may be gained by observation, and as the result of ours, we would say, a high temperature is essential to give the predisposition to dysentery, but that pure uncomplicated colitis, the dysentery which prevails in June and July in the Bombay presidency, is more or less prevalent according to the degree of moisture, exposure to bleak winds, and crowded state of barracks, the latter rendering the body more susceptible. It is perhaps a curious fact that I have only met with one unequivocal case of this dysentery in an officer in ten years, out of an average strength of thirty or upwards, and that was mild and yielded readily to treatment.

The gastro-enteric and hepatic dysenteries we would refer todry

cold, rather; the predisposition having previously been given also by a high temperature, and fevers of the intermitting and remitting types. They are particularly prevalent on a change of climate from low confined moist situations to high lands and bracing winds, and especially if fever has been prevalent at the former.

Both Fort George and the Town barracks, the Queen's have always found healthy with only one wing, 350 to 400 men, the bombproofs in the latter being given up to the married people. In 1832 the wing in the Town barracks, lost only one man in six months, and that was by cholera. It is true, one or two sent over from thence with chronic disease, died in Colaba, and even in 1833 when we were unusually crowded, though the mortality in the whole regiment amounted to upwards of fifty for the year, only fourteen died out of by far the strongest wing in the four monsoon months, and of these, eleven by cholera. The other three were, fever, one; dysentery, one; rupture of the heart, one. Cholera, was equally fatal on Colaba. In the Town barracks five of them died in one day. I have no doubt it originated in the hospital, a part of the barracks, merely half matted off from the rest. We were extremely crowded, whereas on Colaba they had abundance of room.

The Town barracks we think from their being dry and sheltered, would always be found the most healthy at the Presidency during the rains, provided an hospital were attached and the ventilation improved, the latter of which could be easily done. The bombproofs below, however, are extremely fatal to children.

Demerara and Berbice in the West Indies, low and sheltered on the main, though fever is there also very prevalent, give a much less comparative mortality by affections of the stomach and bowels than the islands, where the chief object in the selection of a site for barracks has been to get out of the way of the fevers by building on elevated situations, or such at least as have a free exposure to the trade winds.

Diseases of the lungs, consumption particularly, seem to be much under similar influence, and we remember when in Barbadoes in the end of 1829, the 86th Regiment in the old barracks, on an elevated site overlooking the sea, were losing one or two weekly by this class of diseases; whereas the 19th in the new, a little retired into, what was a swamp, when the Queen's Royal were quartered there, were not losing one.

Compare again Demerara and Berbice with the islands and with Bombay, take consumption for instance, Bombay and Colaba, 3.3; Demerara and Berbice, 4.4; Grenada, 5.2; St. Vincent's, 5.5; Bar-

badoes, 10.7; or Canada with the Bermudas and England, Canada, 4.5; England, 6.4; Bermudas, 7. or the Cape of Good Hope Frontier with the Cape and Mauritius, Cape Frontier. (inland,) 1.2; Cape, 2.4; Mauritius, 3.1;

If these principles be admitted, the idea of building barracks upon more elevated sites is founded upon error, such situations only tending to increase the mortality by consumption and diseases of the stomach and bowels; whilst under two thousand feet, where they have been tried as in the West Indies, Sierra Leone, &c. they have in no way diminished that by fever, were this last even an object at Bombay.

Belgaum the next in equability of temperature and degree of moisture, and holding a middle rank in the dry season at least, between the climates of the low country and the hill convalescent stations, is the next we shall consider. Here we find in the cold weather it is inferior to Bombay, and particularly with respect to hepatitis, bronchitis, enteritis or dysentery, perhaps, and dyspepsia, the latter of the inflammatory gastric species.

Belgaum we find least healthy when most cold, whether united with drought or moisture, and most healthy when warmest, whether in the dry or rainy season.

Poona, a drier and upon the whole a considerably warmer climate than Belgaum, at all seasons during the day, though in the cold weather the thermometer does perhaps fall a little lower towards morning, is the healthiest of all, and little inferior to England and her North American possessions. The fever we believe to be strictly local. It is that which keeps the proportion of sick comparatively high at this station, though it does not add more than two or three to the annual proportion of deaths.

These are tried climates, but between, we have the hill convalescent station of Mahabuleshwar; would any advantage accrue to the service from having a European cantonment there, (we allude to Panchgunnee,* for Malcolm Pait would not be habitable during four months of the year.) In this we think two questions at least are involved, but what we shall now only consider is, whether the mortality in a European Regiment would be likely, to be diminished by being stationed there, rather than at Poona or Belgaum. We think scarcely; for on looking over the tables, we see no class of fatal diseases, which could be expected to be less prevalent than at either of these last stations, except fever perhaps and diseases of the brain, amount-

* V. Transactions Medical and Physical Society of Bombay, No. III. Page 212.

ing in all to 4 or 5 per 1000 of strength annually, whilst we might expect a considerable increase by liver, consumption and dysentery; for it must be admitted, compared to Poona, Panchgunnee posesses most of the bad properties of Belgaum united to some of those of Bombay. We allude to excessive (comparatively) cold and moisture.

To this may be objected Maroon town in Jamaica, a similar height above the low grounds, and with a similar annual fall of rain, but here we suspect the greater prevalence of malignant fevers is the cause, and after all the difference is not great. Take away that by fever alone, and the comparative mortality would be as 34.4, low grounds to 32.7, Maroon town at an elevation of two thousand feet. Fever on the contrary, is as 101.9 to 15.3 making the total difference as 121, to 32.7. Of course in a climate of this kind, there could be no doubt upon the point, or even, if the mortality at Poona by fever amounted to 10 or 15 annually per 1000 of strength, but when it does only to 2 or 3 we leave a climate which can scarcely be surpassed within the tropics for one, at least, which is untried.

Besides we have reason to believe that Poona is even more healthy than the tables shew, a considerable portion of the mortality being caused by reliefs from the low countries, often not well considered; and at Panchgunnee, the loss by this cause would certainly not be less. Again, the annual fall of rain on the low grounds of Jamaica and of Maroon town are nearly equal, whereas that at Panchgunnee is me th an double that at Poona.

But perhaps, the comparison ought rather to be drawn with the coast than with Poona or Belgaum, and then the point would be settled in the affirmative at once, for the mortality on the coast would seem to be at least twice that of the eastern side of the Ghats. At Deesa we have two seasons which exert a malign influence over the health of Europeans, in addition to the rainy season which is universally unhealthy. These are, at the extremes of heat and of cold, both united with excessive drought; the first in the production of apoplexy, cerebritis and coup de soleil; the last in that of enteritis, dysentery, and other gastric ailments. The cause of the fever is no doubt *local*, depending upon the nature of the soil of the climate. The Eastern Frontier of the Cape of Good Hope would seem, by Major Tulloch's reports, to resemble Deesa much in elevation, temperature, and quantity of rain, yet the mortality by fever there, as indeed by all other classes of disease, is extremely low. When we look to the nature of the soil, however, we find water every where near the surface at Deesa, insomuch that a well might be had in every garden. They are very common, whereas on the Cape Frontier, this is quite the reverse.

Fifty miles from Deesa is mount Aboo, a famous table land, three

thousand or four thousand feet above the level of the sea. Would any advantage be derived from having the military cantonment removed there. Taking the question simply as one of comparative mortality, for we admit there may be others of still greater moment, we have no doubt there would, for though Aboo might possess no advantage over the other hill stations, it certainly would over the plains of Guzerat and Marwar in respect to fever, a disease which at Deesa is either the remote or proximate cause of greater mortality, perhaps, than all others united.

An elevation of two thousand feet grants a very marked immunity from fever, if it does not altogether extinguish it,—witness Maroon town in Jamaica. It would in fact, be a removing from Guzerat to the Deccan, or to those who are acquainted with Ceylon, from the seven Korles to Khandy. It is true, we might expect the mortality by consumption and liver to be considerably increased, say, united, 5 per 1000 annually, or even more the first year of a regiment; but, here much of course would depend upon the care taken in selecting the proper periods for relief. Fever, however, we find is 15 to 20 per 1000 and its sequels 8 to 10 exclusive of invalids; but say 20 in all, from which deduct the estimated increase by liver and consumption, and we have a saving of at least 15 lives annually per 1000 of strength. This we conceive to be a very moderate calculation.

We might now close, were it not that another question presents it self, that is, whether the constitution of troops quartered on the hills or on the coast would be in the most favourable state for undergoing a campaign in the low country. This is a point which experience only, perhaps, can determine, but as the result of several changes up and down within the last ten years, we have no hesitation in saying the former, for we have never witnessed bad effects from a sudden change from the high to the low country, or from a colder to a warmer climate, except once, from Beloochistan into Cutch Gundava, in November 1839, and that was an extreme case, whereas, we have almost invariably, from a warmer to a colder. The reason perhaps is, that habit enables them better to resist cold, the exciting cause of liver and dysentery, the diseases by which the increased mortality is created, whilst at the same time the lower temperature of the hills has rendered them less susceptible. The mortality by consumption might possibly be increased, but for pneumonia and pleurisy, the degree of cold within the tropics, seems scarcely sufficient to give the predisposition; at least, we have never witnessed an unequivocal case of either originating south of the Indus, and even in Affghanistan we never met with pneumonia, till towards the end of the year, when the thermometer had begun to fall below the freezing point

In the following conclusions then, we think we may sum up. 1st. That the most healthy stations for European troops are the table lands, stretching east from the Ghats, sufficiently removed from these to reduce the annual fall of rain to thirty inches or under, and yet not so far as to get into the fever districts, that the second are the Hill stations, and last the low country coast.

2d. That the stations of Poona and Belgaum, in the Bombay Presidency, are in point of locality every thing that can be desired, and therefore that all European troops, not elsewhere required, should be cantoned at one or other of these, or some similar intermediate point, where with due care in making the reliefs from the low countries, the mortality would little exceed that of England.

3d. That only what are absolutely required should be kept at the Presidency, and these quartered during the rains in the Town Barracks, the ventilation of these being improved, and a proper hospital attached, and in the dry weather on the Esplanade or Colaba. The last is the best, and.

4th. That if the North Western Frontier station could be removed to Aboo, leaving at least only what are absolutely wanted at Deesa, there would be a saving to the service of 15 lives annually per 1,000.

*Comparative Mortality, in H. M. 2nd or Queen's Royal Regiment in the island of Colaba and Fort of Bombay, during the years* 1831, 2 *and* 3, *exclusive of Detachments; and agregate average strength for the three years,* 2389.

Average Age, 27. Average period in India, 6 years.

| No. 1. By Official Returns. | | | | No. 2. Corrected by private notes. | | | |
|---|---|---|---|---|---|---|---|
| Diseases. | Total Died. | Per 1000 | Class per 1000 | Diseases. | Total Died. | Per 1000 | Class per 1000. |
| Pleuritis.* | 1 | .4 | 6.6 | Pleuritis | .. | .. | 3.7 |
| Consumption | 12 | 5. | | Consumption | 8 | 3.3 | |
| Chronic Catarrh | 2 | .8 | | Pulmonary Apoplexy | 1 | .4 | |
| Asthma | 1 | .4 | | Rupture of Heart | 1 | .4 | 2. |
| Cardiac Disease | 2 | .8 | 1.2 | Cardiac Disease | 3 | 1.2 | |
| Thoracic Aneurism. | 1 | .2 | | Thoracic Aneurism. | 1 | .4 | |
| Total Thoracic | .. | .. | 7.8 | Total Thoracic | .. | .. | 5.7 |
| Fevers | 7 | 2.9 | 2 9 | Fevers | 9 | 3.7 | 3.7 |
| Hepatic | 5 | 2.1 | 2.1 | Hepatic | 3 | 1.2 | 1.2 |
| Stomach & Bowels | 20 | 8.2 | 8.2 | Stomach & Bowels | 18 | 7.5 | 7 5 |
| Brain | 8 | 3.2 | 3.2 | Brain | 9 | 3.7 | 3.7 |
| Cholera | 37 | 15.5 | 15.5 | Cholera | 37 | 15.5 | 15.5 |
| Other Diseases | 1 | .4 | .4 | Other Diseases † | 7 | 3.2 | 3.2 |
| Total per 1000 | " | " | 40. 1 | Total per 1000 | " | " | 40. 5 |

* This was a mistake. — The man died in the European General Hospital, of the effects of exposure to the sun during the Parsee riot; and Pleuritis was read for Phrenitis.

† "Other Diseases" — Of these two were Cachexia from confinement in cells, rheumatism &c. Phlebitis, one; Purpura, one; Splenitis, one; (nothing found on dissection); and one or two on the arrival of the Regiment at Poona in December 1833, neither of whom I saw, not having then been doing Hospital duty.

N. B. Two died in Barracks, of "Ruptured Blood vessel," not included.

*No. 3. — Comparative Mortality, in H. H. 2nd or Queen's Royal Regiment, from 1st June to 31st December, 1836, the first five months in Poona, the last seven in Fort George, Bombay. Corrected by private Notes.*

Average Strength, 719. Average Age 31. Period in India, 10½.

| Diseases. | Total Died. | Per 1000 | Class per 1000. |
|---|---|---|---|
| Pleurisy* . . . . . | 1 | 1.3 | 4.1 |
| Consumption . . . | 2 | 2.8 | |
| Cardiac Disease . . | 4 | 5.5 | 6.8 |
| Thoracic Aneurism. | 1 | 1.3 | |
| Total Thoracic . | .. | .. | 10.9 |
| Fevers . . . . . | 1 | 1.3 | 1.3 |
| Hepatic . . . . . | 4† | 5.5 | 5.5 |
| Stomach & Bowels. | 5‡ | 6.8 | 6.8 |
| Cholera . . . . . | 1 | 1.3 | 1.3 |
| Other Diseases . . | 1 | 1.3 | 1.3 |
| Total per 1000. | " | " | 27.1 |

*No. 4. — Comparative Mortality, in H. M. 2nd or Queen's Royal Regiment, at Poona, during the years 1834 and 35.*

Aggregate Strength, 1395. Average Age, 30. Period in India, 9.

| Diseases. | Total Died. | Per 1000 | Class per 1000. |
|---|---|---|---|
| Inflammation of lungs (questionable this) | 1 | .7 | 2.8 |
| Consumption . . . | 8 | 2.1 | |
| Cardiac Disease . . | 4 | 2.8 | 4.2 |
| Thoracic Aneurism. | 2 | 1.4 | |
| Total Thoracic . | .. | .. | 7. |
| Abdominal Aneurism | 1 | .7 | .7 |
| Fevers . . . . . | 3 | 2.1 | 2.1 |
| Eruptive Fevers. | 2 | 1.4 | 1.4 |
| Hepatic . . . . . | 4 | 2.8 | 2.8 |
| Stomach & Bowels. | 5 | 3.6 | 3.6 |
| Brains . . . . . | 3 | 2.1 | 2.1 |
| Other Diseases . . | 3 | 2.1 | 2.1 |
| Total per 1000. | " | " | 21.8 |

* Chronic, contracted off the Cape of Good Hope.

† Except one, sequels of fever — ‡ One or two, sequels of fever.

## *No. 5. — Comparative Mortality in H. M. 2nd or Queen's Royal Regiment at Belgaum during the years* 1837 *and* 38.

Aggregate strength 1399. Average Age 32. Period in India 13.

| Diseases. | Total Died | Per 1000 | Class per 1000 |
|---|---|---|---|
| Consumption. . . . . | 2 | 1.9 | 1.9 |
| Cardiac Disease . . . | 2 | 1.9 | 3.9 |
| Thoracic Aneurism. . | 2 | 1.9 | |
| Total Thoracic . . | " | " | 5.7 |
| Abdominal Aneurism. | 1 | .9 | .9 |
| Fevers . . . . . | 1 | .9 | .9 |
| Hepatic * . . . . . | 11 | 10.4 | 10.4 |
| Stomach and Bowels . | 4 | 3.8 | 3.8 |
| Cholera . . . . . | 1 | .9 | .9 |
| Other Diseases . . . | 1 | .9 | .9 |
| Total per 1000 | " | " | 23.5 |

## *No. 6. — Comparative Mortality, in H. M. 2nd, or Queen's Royal Regiment at Deesa, from* 1*st April,* 1840, *to* 31*st March,* 1841.

### *Corrected.*

Average strength, 882. Average Age, 26 years. Period in India, 4½ years †

| Diseases. | Total. Died | Per 1000 | Class per 1000 |
|---|---|---|---|
| Pulmonary Diseases. . | 2 | 2.2 | 2.2 |
| Cardiac and Aortic . . | 3 | 3.4 | 3.4 |
| Total Thoracic . . | " | " | 5.6 |
| Fevers . . . . . | 18 | 20.4 | 20.4 |
| Hepatic . . . . . | 3 | 3.4 | 3.4 |
| Stomach and Bowels . | 13 | 14.7 | 14.7 |
| Brain . . . . . | 6 | 6.8 | 6.8 |
| Other Diseases . . . | 4 | 4.5 | 4.5 |
| Total per 1000 | " | " | 55.4 |

* Most of these are under "Dysentery," in the returns, and perhaps with equal propriety (Hepatic Abscess with Dysentery), Three or four are under "Fevers."

† 500 Recruits under 2 years in India.

## Article V.

### *On the Jungle fever of Candeish. Extracted from the annual report of the 15th Regiment N. I. for the year*, 1840.

By A. Graham, Esq.

Presented by the Medical Board, April 1841.

General Observations. — In my last year's report, I entered, at some length, into the causes and effects of *Jungle Fever*, and I then adduced some well authenticated statements of fatal cases of this disease, in order to show the impropriety of exposing troops to the influence of certain noxious agents present in the jungles at a certain season, where such exposure is not absolutely required by the exigences of the service.

The observations made by Lieut. Colonel, now Major General Briggs, during the years 1815 and 1825, and also those made by myself at a later period, incontestably prove that during the months of October and November, (particularly October) when vegetation is extensively decayed and water has become stagnant, the disease is both most prevalent and most malignant, — so malignant, indeed, that in the comparatively few instances from which death does not immediately result, there remains so much functional disturbance and perhaps, so many organic changes, as to render the soldier unfit for the due performance of his duty.

I am under the painful necessity of again alluding to this subject in reporting upon the medical state of the 15th Regiment N. I. during the last twelve months, as during the latter part of this period I have had, under my care, three sepoys labouring under visceral disease in consequence of fever contracted in October last, when these sepoys and a naique (all now in hospital) were sent in charge of a deserter through the jungles which lie between Dywell and Soneghur, on the road leading from Malligaum to Surat. These are the same jungles through which, in November 1839, only a year before this occurrence, a naique and six sepoys were sent in charge of horses from Malligaum to Surat. Of this party all were seized with fever: one poor man became deranged, and wandering about the jungle, soon died, and of the five who lived to reach camp, only three recovered, the two remaining were long in overcoming the sequelæ of the fever.

Colonel Briggs states (and his statement which, I formerly quoted, I now wish to bring again to the notice of the Medical Board) that in the same forest, in the year 1819, a detachment of fifty sepoys and an European officer passed to Surat in September and returned in October. The whole of the sepoys were affected with fever and the European officer died. In the following year sixty men performed the same duty at the same season, nearly all of whom died. The Officer escaped, after a lingering illness, with his life.

At the same time, also, a detachment of H. M. 67th. Foot, consisting of five officers and twenty-two privates, marched from Surat to Candeish, of whom one officer and a private only survived; the whole of the rest died within a fortnight of their arrival at Head Quarters of the Regiment. All the Europeans who have passed by this route, within the last nine years, in the unhealthy months, have invariably died. The disease which affects them is a violent bilious remittent which usually carries off the patient in a few days, in spite of the earliest and most skilful medical aid.

It is much to be lamented that these remarkable facts, although officially reported to Government by Colonel Briggs, should not have led to the prevention of subsequent calamities of a similar nature. In 1830, four hundred native troops, marched from Malligaum against some tribes occupying the neighbouring hilly country, after a compaign of between two and three months, during the most unhealthy season, only one hundred and twenty out of the four hundred marched back into camp; of five European officers, one died, three went away sick, one to England, and two, to the Neilgherris. During the campaign many horses got distinct hot and cold fits of fever, and ten out of about a hundred died.

These facts have been communicated to me, by Captain Douglas Graham, who was one of the officers employed on this service. The Assistant Collector of Candeish has mentioned to me, that on one occasion the villagers sent in all the muskets of the Kookurmoonda detachment, the whole of the party having perished in consequence of fever.

To enumerate the many fatal and lamentable cases, hitherto only locally known, in which this disease has occurred, would fill a long paper on this subject, and as my present report is of a general nature, I must content myself with expressions of my deep sense of the vast importance to the service and to humanity, of investigating the circumstances, under which jungle fever occurs, so as, to ascertain its causes and to enable us, if not to withhold the sepoys from these causes of fever, at least, to modify their effects.

In January of the last year, six hunderd recruits for general service, traversed the last jungle alluded to by Colonel Briggs, betwixt Malwa and Candeish; several officers had passed through the same tract, at the same time, with impunity. These recruits slept on the ground, and after marching during the heat of the day, were exposed to the intense cold of the night; several of them, however, had warm quilted cotton jackets, and thus escaped fever or had it only slightly. On their arrival at Malligaum, nearly sixty were admitted into hospital; some of these poor men had suffered for several days and were beyond the reach of medical aid when they arrived; only seven of the number died. The complication was chiefly bronchial of a very intense character. The bronchial membrane had become swollen, and the air cells filled with secretion: the blood was thus deprived of its due proportion of oxygen, and the effects of unoxygenated blood were apparent upon the brain. One man died delirious on the day of his arrival without our being able to give him any medicine. In the worst cases, scarcely any pulsation at the wrist could be discovered, the surface was cold, dry and rough, the function of respiration was much impeded, the whole of the muscles, attached to the thorax, being called into action to expand the chest without the power to effect it, and yet there was no local pain.

In the progress of the disease, the air cells were ruptured, and their connecting tissues, and thence, the air without rupturing the bronchial lining escaped by the root of the lungs to the cellular membrane of the thorax, forming emphysema of the neck, face and around the clavicles.

Hœmorrhages of a dark corrupted blood occasionally took place from the nose and throat. In one or two cases deafness occurred. Where disease of the cerebrum was superinduced, the tongue was rough and dry, and broken into furrows: when the abdominal complication prevailed it was smooth, dry and glossy.

The form of jungle fever in October and November, seems to be bilious intermittent and remittent, owing, no doubt, to the great congestions which take place in the splenic and portal circulation, again, as the cold season advances and becomes more intense, the jungle fever assumes the character of gastro-enteritis, and bronchitis, and eventually, as the cerebrum becomes affected a typhoid fever is superinduced. In these jungles, in October and November the exhalation from decaying vegetation is very extensive, and putrid matter fills the waters.

On the tanks, and wells and nearly stagnant rivers, a dark substance like floating oil abounds. It has also been stated that a poi-

sonous vegetable exists on the banks of some of the streams, and, after the rains, impregnates the river with its noxious qualities. In all the waters of Candeish the natives are known to steep hemp after the rainy season; putrifaction and animalculæ must therefore abound in this essential necessary of life, no doubt proving a great cause of disease. Animalculæ alone are said by Dr. Copeland, when received into the circulation, to cause fever. Majendie and Dr. Gaspard state, that both putrescent animal and vegetable matters, when injected into the blood vessels of the inferior animals, occasion phenomena strikingly analogous to those exhibited on the human subject labouring under malignant fever. These putrid substances introduced under the skin, as well as into the blood, have been known to produce symptoms similar to those of typhus fever, and after death, the blood is remarkably altered. It is nearly altogether fluid and is of a very dark colour and exudes from the mucous surfaces.

The following official letter from the Deputy Post Master Hoosingabad, to the Secretary of Customs and Post Office Committee, dated 17th May, 1837, points out the bad effects of corrupted water on the human constitution.

"For the benefit of the Police Chokees and travellers, I had wells made at all the stages to Baitool which precaution has quite put a stop to jungle fever which used to be contracted by the Najeems, dawkmen, travellers, and people who resided there."

In a native regimental hospital, for the most part, the different diseases are so few, and these vary so little in their forms, that a single description which shall embrace the usual typical characters of any particular disease, will generally be applicable to all the cases in which that disease occurs.

I have found this to be so much the case, that in my annual reports, I have experienced great difficulty in avoiding repetition, and for want of more original matter, have been obliged from time to time to confine myself to a mere reference to my former views and treatment, according as opportunities have enabled me to test their accuracy and success.

## Article VI.

*Observations on the Dracunculus as it prevailed in the 22d Regiment, N. I. from April till September*, 1841. By D. Grierson, Esq. M. D.

Presented by the Medical Board, September, 1841.

The first case of dracunculus, the only one for that month, was admitted in February. The admissions for the successive months were as follows. March 27; April 184; May 79; June 34; July 13; and August 5; while the discharges were March 3; April 29; May 49; June 42; July 64; and August 87. One man died and 68; remain in hospital.

The number of cases treated including a few re-admissions (the exact number is 16, has been 343. The number of worms extracted has been 700, averaging two and a small fraction to each man. Of the whole number treated there have been, having worms on the body 5; upper extremities 29; lower extremities 335. No case of worm on the head has been observed.

The cases may again, with respect to the worms, be divided into uni-numeral and multi-numeral. Of the former there have been 169, of the latter 174; of the former the distribution was as follows: — body 2; upper extremity 5; lower ditto 162. The multi-numerals consisted with few exceptions (the exact number is six) of a plurality of worms on the lower extremities.

Frequently three, four or five worms, more rarely six, have coexisted or succeeded each other in the same individual. Two cases, one of eight, the other of ten, which is the highest, have occurred.

The complaint has presented its usual characters. Often general excitement with extreme pruritus and a universal erythema, or eruption somewhat resembling the wheals of urticaria, has proved a premonitory symptom. A sudden puffy swelling with little pain has often served the same purpose, sometimes unusual itching has led to the discovery of the worm lying cord-like in the subcutaneous cellular membrane. Most frequently the appearance of a bulla attended with itching, or not, has given intimation of the disease.

In the first case a brisk purgative has relieved the distressing feeling; the eruption disappears; and in two or three days the bulla will indicate the seat of the animal. In the second case the purgative is also needed, and lead lotion has been used with advantage. In any case when the bulla appears, the practice I have followed is to remove the elevated cuticle; then to clear away any inspissated mucus that may adhere to the base. In doing this, it often happens that a little diaphanous bag containing limpid fluid is seen, and if this be pulled upon, it will be found to be the end of a small hair-like tube which may be taken out to the length of many inches. I notice this, because it has doubtless given rise to the idea that worms exist of the size of a horse hair, — which is erroneous.

The next thing I have done, is to clip away, without attempting its extraction which is injurious, close by the surface, this inner organ or apparatus of the animal, and when the part is dried, rub it well with lunar caustic. The part being left exposed, a hard dry covering is afforded, which after a few days, when the new cuticle has formed under it, has been detached; with this advantage, all previous irritation is removed, and instead of a large tender surface continually liable to suffer from contact with the worm, the orifice alone by which the worm is to be extracted remains.

In detaching the dry slough formed by the caustic, it usually happens that the end of the worm has adhered, or if not, a little blackened point indicates the desired object. The worm being seized with fine forceps, light traction applied in various directions till the axis of the worm is discovered, has been used. So long as the worm yields, this has been continued, but when resistance is made, — suspended, — to be renewed again after twenty-four hours; and I should prefer no way of disposing of the part extracted, to that, of coiling the worm on itself and covering it with a piece of oiled-silk; but in the absence of this useful material it has been wound on a flock of cotton (care being taken to renew it frequently) and covered with some succulent leaf.

Many a worm has thus been got rid of with very little inconvenience. But in many, perhaps in most cases, by carelessness, by accident, or despite of every prudence and caution, the worm will break. In such cases the caustic has been freely applied to the orifice, and I believe the dilation by the scalpel of the orifice to admit of free application of the caustic, would be an improvement on this practice. The end of the worm may again protrude by the orifice (rendered more probable by dilation) which is most desirable; or diffuse inflammation of the limb with effusion of serum, or blood, causing great swelling may ensue. In this case I have been slow to practice the

free crucial incisions recommended by some. Active purgation and cold lotion will in most cases answer every indication. Cases where the constitution may be seriously involved, or joints may threaten to be injuriously affected, would of course justify more active, provided they be more certain, means of relief; but it is to be borne in mind, that the inflammation is not strictly phlegmonous, but more of that description following the bite or sting of venomous insects or reptiles, where the tendency is so much more to effusion than suppuration.

A third event may follow the disappearance of the broken end of the worm. The irritation may produce true phlegmonous inflammation, leading to the formation of laudable pus without much affection of the limb generally, or this effect may take place after the diffuse swelling, already alluded to, has gone off. And here the acknowledged and good principle of surgery as to the early opening of abscesses has been departed from. The abscess is the result of the effort of nature to expel the offending foreign body, and early interference with it may defeat this object. But, let the abscess be well matured, and the probability is the worm will be detached, in part or in whole, so that, an opening being made, it may at once escape or be soon after extracted. The pain of abscesses, which involving as they often do parts which when inflamed are exceedingly painful, has been moderated by leeches, poultices and anodynes.

It sometimes happens that inflammation follows the entire extraction of the worm; and the ulcers succeeding the extraction of the worm, whether formed by abscesses or otherwise, often remain very long and resist a great variety of treatment. In such cases constitutional treatment sometimes effects a rapid improvement.

Such have been my views and the practice they have led to, during this tedious time of harassment and suffering, and I know not that I could do better than adhere to them on any similar future occasion.

I have cut down upon and extracted the worm in whole or in part, but for various reasons, I would neither follow this practice nor recommend it to others. I regard attempts to get rid of the worm quickly by medicines, whether internal or local, with no more favour than such attempts would merit, were they directed to the removal of any foreign substance whatever, lodged by whatever means in the body. Several pretenders to specifics were encouraged by being allowed to select their own time, treatment and patients, but their endeavours were futile.

I have nothing of any value to state on the obscure subjects of etiology and prophylaxis.

I have noticed one erroneous idea regarding the animal. The only other which I shall now mention concerns its length. I have seen nothing to countenance the assertion that the creature attains the length of twelve feet. To appearance, all I have seen, have been between one and a half and three feet, and of twenty preserved entire which I now have, the average length is twenty-three six-eighths inches; the longest and shortest being respectively thirty-one and eighteen inches.

## Article VII.

* *Notes sur la plaie du Yemen, offrant l'analyse d'une monographie de cette Maladie.* Par M. Le Lieutenant Colonel Dr. Chedufay, Medecin Inspecteur des armées d'Arabie.

† Presented December, 1840.

I. Parmi les maladies qui attaquent les habitans du littoral de la mer rouge il en est une qui semble ne pouvoir exister solitaire, mais bien aggraver une premiere maladie, lorsque celle ci offre toutes les conditions voulues pour la recevoir.

II. Cette maladie consécutive à une maladie primitive est la plaie

* A Messieurs les Membres de l'Academie de Medecine de Bombay.

Messieurs, — J'ai l'honneur de vous adresser par le bienveillant intermediare de M. le Dr. Bloxham un memoire intitulé " Notes sur la plaie du Yemen," offrant l'analyse d'une monographie de cette maladie.

L'anatomie pathologique et la therapeutique de la plaie du Yemen, sont encore si peu connues, qu'il ma paru que vous pourriez accueillir, avec quelque intérét des renseignmens, propres à conduire a l'appreciation des symptoms des lésions, et du traitement de cette cruelle maladie.

Mon but aura été atteint, si en effet, ces resultats peuvent servir de base à des recherches ulterieurs, plus heureuses, et plus completes

J'ai l'honneur de vous,
saluer Messieurs avec
consideration votre Serviteur
Dr, Chedufay.

Gedda, ce 11, Aout, 1840.

† *Note by the Secretary.* — This paper was presented to the Society by C. R. O. Bloxham, Esquire, Assistant Surgeon, Bombay Establishment, who after having seen the intractable nature of this disease at Aden, proceeded on duty in the H. C. Brig Euphrates to Jedda where in an hospital established by H. H. the Pacha of Egypt under the charge of M. le Dr. Chedufay, Dr. Bloxham had an opportunity, during a period of three months, of observing the treatment pursued in that Institution. Dr. Bloxham struck with the success of the treatment, requested M. le Dr. Chedufay to favor him with a copy of the report made by him to the Institute of Medicine in Paris — with this request, M. le Dr. Chedufay obligingly complied, and at the same time presented two well executed drawings, of the ulcer in different stages. It is with regret that the Committee have found themselves unable to publish these drawings.

du Yemen nommée par les habitans du pays Guiarh Yéméní ; jài conservé cette dénomination.

III. Propositions sur la maladie connue sous le nom de plaie du Yemen.

1. La plaie du Yemen n'est pas connue ; on la crue jusqu'ici une maladie toute locale ; elle tient toujours à un vice général, dont cette plaie n'est qu'un symptome, et qui revêt les formes adynamiques.

2. Sous le rapport de la frequence, on remarque que cette affection se présente dans l'ordre suivant.

1. Chez les Negres venant du Sennâr ou des contreés voisines, comme le Kordofan, le Darfour, &c. 2°. Chez les indigénes de la classe misérable, et les Indiens malheureux. 3°. Chez les soldats, de Syrie nouvellement arrivés et soumis à de grandes fatigues, ou qui ont souffert des maladies du pays, et des intemperies d'un climat chaud, si different du leur. 4°. Chez les Egyptiens transportés dans l'Arabie ; chex eux elle est rare, et a besoin, pour se développer, qu'une des causes génerales qui précédent son développement soi beaucoup plus prononcée que chez les individus des trois autres catégories. 5°. Les Officiers Turcs, en assez grand nombre dans les regimens, n'ont presenté que cinq a six cas dans l'espace de sept ans. 6°. Les Turcs attachés à la cavalerie, ou aux regimens irréguliers ont succombé en assez grand nombre à la suite de cette plaie, mais toujours il y'avoit, en avant, une maladie primitive, et tous appartenaient à la classe malheureuse, ainsi que quelques marins Indiens de la marine de la compagnie et marchands. 7°. Les Europeans n'en'ont jamais été atteints quelles que soient les écorchures, les plaies, ou autres solutions de continuité de la peau des extremités inférieures.

IV. La plaie n'est ni épidémique, ni contagieuse ; ce dernier fait resulte de l'expérience directe d'inoculation que jái faite sur plusieurs individus.

V. La plaie ne se rencontre que depuis Yambo à environ 24° de Lat. N. jusqu' Aden un peu moins de 13° L. N.; elle est de plus en plus commune selon qu'on s'approche du littoral, plus encore dans les iles ; ne se remarque que rarement dans l'interieur et toujours dans ce cas, elle est bénigne ; cependant, au bas des montagnes du Hedjaz ou nos troupes campaient, elle a fait beaucoup de ravages l'année dernière ; cette année, vu de certaines circonstances atmospheriques, elle a parue pour la premiére fois sur les montagnes du haut Hedjaz ou elle etait inconnue.

VI. Le siege le plus commun de cette plaie est à Confouda pays trés bas, et au dessous du niveau de la mer ; à Moka et dans l'ile de Kamran voisine de ces pays.

VII. Présque constamment, la plaie se montre aux extremités inferieures, depuis le genou jusqu'au bout des orteils, particuliérement sur le coté interne du membre et le dos du pied.

VIII. Elle est toujours liée, comme nous l'avons dit plus haut, à un vice général de l'economie ; car ce n'est que dans des cas exceptionnels qu'il n'en existe aucune trace. Ces vices généraux, sans lesquels la plaie ne fait que très peu de ravages, et qui, d'après cela, semble être la cause essentielle de la maladie, sont d'apres leurs ordres de fréquence. 1°. La diathèse scorbutique arrivée à un dégré tel, que par des symptomes extérieurs, et souvent mèmes tres marqués il est impossible de la méconnoitre ; en général la plaie offre les caractères des plaies dites scorbutiques. 2°. L'adynamie suite d'une maladie chronique, ou d'une aigue prolongée au dela du 15me ou 25me jour ; période qui suffit dans cette contrée pour qu'il existe une adynamie très profonde, pendant laquelle se montre fréquemment l'œdematie des membres inferieurs, à laquelle il faut reconnaitre une grande influence pour le developpement de la plaie. 3°. La nostalgie, les chagrins, les privations, la mauvaise nourriture, les fatigues jointes au changement de climat, toutes causes de nature adynamique, sont autant de causes prédisposantes, qui n'attendent plus que la cause occasionelle.

IX. Cette cause occasionelle est toujours une égratigneure, ou une écorchure resultat de la chaussure, du prurit, d'un choc, &c. il se montre d'abord un petit bouton qui une fois écorché donne rapidement naissance à la plaie ; elle est produite trés souvènt par la piqûre d'un petit insecte qui vit sur le chameau, cette derniere determine un fort prurit, la piqûre s'engorge et la plaie paroit.

X. Celle ci une fois déclarée, et la maladie n'etant pas encore parvenue à cette époque ou l'adynamie est à son dernier periode, le changement de lieu en s'eloignant du littoral, est un des meilleurs moyens de la modifier favorablement.

XI. Sous le rapport du diagnostic, dans le cas ou les causes générales existent (sans lesquelles la maladie est benigne) ou peut noter les trois dégrés suivants. 1° dègré : la petite plaie résultant du bouton, ou de l'écorchure produite par la chaussure, loin de se cicatriser, présente au bout de deux ou trois jours, de l'inflammation à son pourtour, avec gonflement, tandis qu'au centre on remàrque une petite escarre ; aprés deux ou trois jours il se forme un second cercle inflammatoire, tandis, que le premier passe à l'état gangreneux ; la premiere escarre etant tombée laisse à sa place une dépréssion par perte de substance, qui augmente rapidement jusqu'a acquerir la grandeur d'une piéce de cinq francs. Jusqu'à la, la peau seule et le tissu

cellulaire sous-cutané ont été attaqués ; arrivée à cet état la plaie se nettoie, sa surface est rougeâtre, ses bords relevés et renversés en dehors ; il existe des douleurs limitées aux environs de la plaie : tel est le premier degré de la maladie.

2°. degrée En cinq ou six jours la plaie s'agrandit avec rapidité, au point d'egaler la surface palmaire ; pendant ce temps elle ne borne plus son action à la partie dermoide elle s'étend aussi en profondeur, attaque les muscles et les tendons ; elle n'est plus uniforme, elle creuse inégalement, presente des pilliers des colonnes charnues, entre les quelles on remarque, des points gangreneux ou grisâtres qui forment des nouvelles escarres ; les bords continuent à se renverser endehors, deviennent de plus en plus relévés, de plus en plus douloureux ; autour on remarque un cercle grisâtre, qui se trouve bientôt envahi et confondu dans les nouveaux progrès de l'ulcére. Souvent dans dix à douze heures le fongus recouvre les trois quarts de la plaie, et aprés avoir disparu, reparoit de nouveau au bout de dix à quinze jours. Cet accident, qui arrive assez souvent, retarde la guerison surtout lors quél revient à plusieurs reprises sur le même individu. Il n'est pas rare alors de voir, la plaie se cicatriser malgré la destruction des muscles et des tendons ; mais au moment ou la cicatrice semble complette et durable, à la suite d'un changement dans la direction des vents, ou de toute autre cause externe ou interne cette large cicatrice se parsème de points enfoncés gangreneux qui rongent cette derniére, et se rapprochent. Dans deux ou trois jours la plaie est dans son état primitif ; souvent dans, 24 heures, la partie cicatrisée tombe en lambeaux comme on l'observe dans les parties putrifieés. Dans ce degré les douleurs insupportables ne sont plus bornés au pourtour de la plaie, mais elles s'etendent le long des muscles, des tendons, des os, et s'opposent par leur continuité au moindre repos. Dans ce degré quoique l'os ne soit pas encore à découvert, il est déja malade ; en effet, si l'on vient à le mettre à nu, soit en pressant sur le tissu ramolli qui le recouvre soit en faisant une petite incision, on trouve le perioste detruit et l'os atteint de carie. Souvent l'os necrosé se détache et suit lui meme les progrés de la guerison ; dans ce degré l'homme reste prèsque toujours estropié.

3°- degré ; la plaie continue de s'agrandir ; sa surface et sa profondeur finit par mettre à nu les articulations et les os ; alors, de l'état de carie, l'os passe à celui de nécrose. Si le malade resiste encore aux progrés toujours croissants de la maladie, les parties necrosées, s'exfolient, et au pied par exemple, les phalanges se detachent, ainsi que les os du metatarse ; la plaie pendant, tout ce

temps, en totalité ou en partie, est recouverte d'escarres gangreneuses humides ou séches.

XII. Au premier degré l'ecoulement qui a lieu par la plaie, est une suppuration sanguinolente, qui en séjournant sur les bords, determine sur les points avec lesquels elle est en contact, une inflammation manifeste ; elle tache le linge d'une maniére indélébile, mais sans le detruire ; mais dans les deux autres il y a en outre destruction du tissu ; la plaie bien essuyée conserve un aspect blanchâtre ; dans le cas de guerison, la suppuration reprend les caractéres ordinaires des plaies qui se cicatrisent dans le 2me. degré, la suppuration sanguinolente fait place à une suppuration grisâtre, et de plus à une sérosite très abondante; les points gangreneux donnent la suppuration, dont les caractéres et l'odeur sont connus. Dans le 3me. degré il y a toujours gangréne et nécrose ; la suppuration est celle de ces deux états avec la suppuration du premier degré, qui même existe seule et en petite quantité dans le cas de gangréne séche ; dans les trois cas l'odeur de la matière qui s'en ecoule, outre celle particuliere à la gangréne, a quelque chose qui la rend repous sante.

XIII. Dans tous les cas, et à tous les degrés à moins de diarrhée colliquative ou de dyssenterie le pouls est toujours normal, l'appetit très devellopé, les digestions parfaites, la peau seche sans sueur, et decolorée, malgré les douleurs atroces et l'insomnie du malade.

XIV. La marche de la maladie est caractérisée par le passage successif d'un degré á un autre. La durée de chacun d'eux varie suivant l'intensite de la maladie prédisposante dont nous avons parlè, ou de la disposition plus ou moins forte á la contracter des divers sujets indiqués plus haut ( no. III ). ainsi une plaie peut ne mettre que quinze jours pour arriver au troisième degrè, ou au contraire mettre plusieurs années.

XV. La durée est très variable, et quelque soit la terminaison, soit par la guérison, soit par la mort, celle ci peut, d'après les memes motifs que nous venons d'énoncer pour la marche, etre plus on moins eloignée du point d'origine.

XVI. La plaie du Yémén peut exister seule, á un seul membre, etre multiplieé, ou même attáquer les deux membres á la fois.

XVII. Le pronostic varie également selon la classe atteinte (voir les propositions ), la gravité de la maladie prédisposante, le degré de l'affection locale, le temps ecoulé depuis l'invasion. Cependant on peut dire que dans le 3me. degré, la guerison quoique possible est très rare, et laisse toujours les personnes estropiées par suite de la destruction des muscles, des tendons et de portions d'os ; que dans

le 2me. degré la majeure partie guerissent en conservant d'enormes cicatrices, qui génent plus on moins le mouvement des membres; que dans le 1re. degré la plaie très limitée ne laisse aucune infirmité.

XVIII. La récidive est assez fréquente quelques jours apres la cicatrisation complette; mais la fréquence varie en raison directe du degré plus avancé, auquel etait parvenue la maladie; elle n'arrive guère que dans le 2me. ou 3me. degré et peut se montrer huit à dix fois de suite; quand elle a lieu dans le 1re. degré, la plaie revient rarement sur le point cicatrisé.

XIX. Sous le rapport de sa nature, la maladie connue sous le nom de plaie du Yémén n'est donc le plus souvent qu'un symptôme d'une maladie générale, comme nous l'avons indiqué dans l'article des causes; ce n'est pas donc, comme on l'avoit cru, une maladie toute locale, mais ce n'est pas non plus le symptôme d'une seule diathése générale, comme les plaies scrophuleuses, vénériennes, qui toutes ont pour cause assignée la diathese du meme nom; ici au contraire la cause générale varie, et a le plus souvent besoin du concours d'une cause occasionelle, quoique celle ci puisse manquer; cependant la cause prédisposante est toujours de nature adynamique.

XX. Le traitement convenable de cette maladie découle nécessairement de la conclusion que nous venons de tirer de la nature de la maladie; il ne devra pas étre seulement local mais bien général, et celúi ci devra être essentiellementt tonique, la plaie considereé comme symptôme exigeant seulement le traitement de tout ulcére ataxique avec, ou sans gangréne. Jusqu'á ce dernier temps, lorsque l'on considerait la maladie comme toute locale, les traitemens locaux mèmes toniques, mais non combinés avec le traitement tonique général, ont en partie échoués; tels ont étés les caustiques, les cautéres actuels, employés pour faire disparoitre les points gangréneux, le sulfate de cuivre, les solutions de chaux, les chlorures de chaux, le quinquine, &c. tous cés moyens, le plus souvent ne faisaient qu' aggraver la maladie et les douleurs. Le contact de l'air est toujours funeste; de la, l'habitude des indígènes, lorsquíls ne peuvent guerir, de la recouvrir avec des plaques métalliques, et de ne la panser que tous les deux ou trois jours.

Pour résumer tout ce qui a rapport au traitement, nous dirons qú'il faut employer un traitement général qui sera celui du scorbut, de l'adynamie et en ayant recours aux toniques usités dans les pays chauds. Surtout au moyen d'une bonne nourriture, de changer de lieu le malade en s'éloignant des bords de la mer.

Enfin dans le 3me. degré; si cette maladie se termine par la

mort, quatre on cinq jours avant, on voit la surface de la plaie complettement mortifieé; les tissus se décomposent et tombent par petits morceaux; la diarrhée colliquative si elle n'existait déja, vient aggraver l'etat du malade, qui succombe accablé par les douleurs les plus atroces. Dans le cas contraire; lorsqu'on se sera décidé à pratiquer l'amputation du membre malade, lorsque toute fois, au moyen du traitement general, on a mis le malade dans de bonnes conditions, et qu'aucune contre-indication ne s'y oppose, on a trouvé que le nombre des succés a été superieur à celui des revers; ainsi sur neufs cas recents il n'y a eu qu'un cas de mort survenu au 40me. jour, aprés l'operation, et par suite de la dyssenterie. On peut quelque fois, lorsque le sujet est jeune, tenter l'operation malgré que toutes les conditions requises, n'existent pas. J'ai observe assez souvent que l'amputation faisait cesser sur le champ la diarrheé colliquative et tout symptôme mortel. Enfin il faut observer que dans l'amputation la réunion par première intention est généralement adoptée et suivie de succés.

Ce qui prouve la forme adynamique que le climat imprime à toutes les maladies, est la necessité ou l'on se trouve de nourrir le malade à partir du jour même de l'operation; car la diète entrâineroit le plus souvent la mort; ce qui vient à l'appui de ce fait est l'absence ou (quand elle se montre) le peu d'intensité de la fievre traumatique.

La ligature des arteres tombe ordinairement du 3me. ou 5me. jour, et par la simplification du procedé operatoire usitè dans les amputations circulaires, la cicatrice du moignon est terminée du 8me. au 12me. jour, si toute fois quelque cause malheureuse ne vient en arrêter la marche; ce dernier cas est fort rare et le malade recouvre en peu de temps son embonpoint primitif.

## Article VIII.

### *Report on the Medical Statistics of Quetta.*

By A. H. Leith, Esq.

Presented by the Medical Board, November, 1841.

The part of Khorasan in which the subject of this report is situated, is a succession of valleys between high ranges of mountain limestone, which run nearly N.N.E. and S.S.W. the strata of the rock dipping generally to the W.N.W. These ranges sometimes have intervals of considerable extent, where the coalescing valleys form plains; in this manner is formed the Dusht-i-bedauleh upon which we emerge from the top of the Bolan Pass. After crossing the northern end of this plain into which the abrupt ends of two or three ranges of rocky mountains and their intervening valleys jut, we enter the farthest valley which is called Shal. This valley follows a N.N.E. direction for twelve or fourteen miles, and then forming an angle, turns to the westward through an interval in the next range, which only partially separates it from the Pisheen valley.

The valley of Shal varies in breadth from four to six or seven miles: at its angular part it is much wider. In the bottom of the valley the ground slopes from each side, the declivity from the eastward and northward being the gentler and more extended, that from the westward and southward the greater, and terminating sooner in the line along which the stream that arises at Sirial runs. At the angular part especially is the slope extended and where it terminates Shalkote or Quetta is situated — this is a small mud built walled town with a wet ditch and a central conical mound, on which are some ruinous buildings, formerly the citadal.

Quetta is in N. Latitude 30° 8′ and its Longitude is said to be 66° 53′ E. Its elevation above the level of the sea is about 5250 feet. Thus situated it has an atmosphere diminished one-sixth in density, which together with its position so near the Tropic gives it a great annual range of temperature.

The seasons are divided by the inhabitants into five, viz. *Zumustan* or winter, of nearly five lunar months duration, commencing about the

beginning of November : it is subdivided into three portions of about forty days each, these are called *Taruchilu, Speenâ Chilu* ( during which snow lies on the gronnd ) and *Suru Chilu.* Then comes *Surlé* or spring, it begins about the middle of March and continues about three lunar months. It was in this season, that the portion of the force to which I am attached arrived in the valley ; the trees were then clothed with their new foliage, the fields were green and the ground was beautifully studded with wild flowers, identical or congeners with English species : snow still continued to fall on the higher parts of the mountains when it rained in the valley, and it was not until the beginning of May that the last traces disappeared from the higher summits of Chiltun, Huzar Gunjee and Tukatoo. So uncertain is the climate, that snow has been known to fall in the valley during the barley harvest, which takes place in June. This year (which was unusually hot) in July, snow was still found in the crevices of the rocks and brought into our camp for sale. *Ahar,* the next season begins with the first ripe Shah-toot (mulberries) about the commencement of June and lasts about forty days the weather is hot but not oppressive ; the heat increases rapidly. In *Ahar* apricots are ripe and the barley and the wheat harvests take place. *Vussa* which is sometimes called Sawun follows, and is also of about forty days' duration. This year it has much resembled the hot season in the inland parts of India before the monsoon ; the heat has been sultry ; the herbage on the unirrigated ground was quickly burnt up. In this season we had cloudy and hazy weather with a few thunderstorms ; on two occasions rain fell, and a fall of rain is yearly expected in this season, and on it in a great measure depends the success of the juwaree crop. The fruits of this season are melons, grapes, plums and pears, cucumbers also are abundant. *Ahar* is considered rather unhealthy by the inhabitants, but much less so than the next season or *Sper Muné,* it is also of about forty days, beginning about the last week of August ; it is analogous to the European antumn : the weather becomes rapidly cooler and the atmostphere is clear and unclouded : the jawaree and maize harvests take place ; the leaves become yellow and fall ; apples, quinces and pomegranates, are ripe. *Wur Muné* follows, it is of one lunar month's duration ; it is considered healthy by the inhabitants ; in it they prepare their winter provisions, &c. It is common with the husbandmen to designate the seasons by the names of the grains and fruits that ripen in them.

On our first arrival, the wind blew chiefly from the northward of west, but since May, with few exceptions, it has blown during the day

strong from the westward, and often very violently, raising much dust; during the nights and mornings there has been a light easterly breeze or a calm; and during August and part of July, from sunset until about 10 P. M. there was generally a southerly wind which brought a thick haze down the valley.

The following is an abstract from the register of the thermometer at Quetta from the middle of April to the middle of September, with the exception of five weeks in June and July, during which the observations were made at Mustoong. As by comparison of the temperature at these two stations, I found it to be alike, I have incorporated the observations made at Mustoong with those made at Quetta.

| April last 15 days | | May. | | June. | | July. | | August. | | September first 13 days. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean. | Mean daily range. | Mean. | Mean daily range. | Mean. | Mean daily range. | Mean. | Mean daily range. | Mean. | Mean daily range. | Mean. | Mean daily range. |
| 60. | 18. | 68.4 | 29. | 80.2 | 30.6 | 82.6 | 29.4 | 80.8 | 25. | 62.5 | 26.7 |

N. B. — It was during the last fortnight in June and the first three weeks in July that the temperature was observed at Mustoong.

These observations were made in a single poled tent with double fly and single walls, similar to those of European soldiers. The difference between the temperature in such a tent and that in a house, both being open and allowing free access to the external air, I found to be in the mean daily maximum in July, less than 6° — the thermometers were in both, hung in free air: — it is frequently the case that the temperature of a house is underrated from the thermometer being hung against a wall.

The neighbouring hills vary much in height; at their highest parts they are estimated at two or three thousand feet; they are of mountain limestone abounding in organic remains, chiefly of cephalopodous mollusca. Masses of lucullite and stinkstone and some chert occur. At the N.E. angle of the valley near Hunna, where the stream that supplies our camp, enters from the neighbouring valley, red conglomerate lies over the limestone, and in that neighbourhood as well as at the corresponding S.W. angle, there is shale alternating with flaggy limestone. Talc occurs in the shale. — Selenite is also found. The bottom of the valley is of a light alluvial soil composed of clay and calcareous and silicious sands, and is mixed with from a fourth to a half or more of rolled pebbles of mountain limestone — that is, in parts not cleared for cultivation.

Cultivation being chiefly dependent on irrigation, is limited in extent and in situation by the supply of water, and the fields and villages are nearly confined to the lowest ground. The streams continue to flow throughout the year, but they are not numerous ; an artificial supply is obtained with great labor by Karez or underground channels, which at a depth of thirty, forty or more feet, convey the water from the bases of the hills. These karez are formed and kept in repair by means of wells along their course at intervals of from twenty to forty yards. Besides the grains already mentioned, lucerne is cultivated to a large extent ; the ground on which it is grown is kept continually wet, while, from the repeated cutting of the plant, the sun's rays are allowed to act on the soil. Madder is grown in considerable quantities, and in its cultivation the damp soil is much exposed to the sun's rays, and in the beginning of October in digging up the roots, the ground is turned up from a depth of two or three feet : at the same period the soil is all broken up for the reception of the wheat seed.

The health of the natives of a place is not a good criterion of its salubrity or the contrary for strangers, for the constitutions of the former have from birth been modified by the circumstances in which they live, yet from the manner in which they are affected we may form an opinion regarding the endemic influences, although not of the intensity with which they will act on the new comer. The chief maladies to which the inhabitants of Shal are subject, are bowel complaints and fevers, and the season of their prevalence are Vussa or the hot season, Sper muné or the autumn, especially the latter. The present year has been an unusually sickly one to the inhabitants, and fever has been very fatal among them, this is ascribed to the excessive heat which there has been. In the memory of man, it is said, so hot a season has not been known.

In forming an opinion regarding the salubrity or otherwise of this valley, from the state of health of the Troops stationed here during the last five months, care must be taken not to include among the cases of endemic disease those complaints which were contracted elsewhere.

The regular corps belonging to the Field Force, that have been stationed here, are the 1st and 4th Troops Horse Artillery, H. M. 40th Regiment a Company of Madras Sappers and Miners ( Natives), a Wing of Native Cavalry and the 20th and 21st Regiments N. I. — of these the 1st Troop H. B., H. M. 40th Regiment and the 21st N. I. alone have remained, all the five months at Quetta. The 4th Troop H. B., the Sappers and Miners, the greater part of the Native Caval-

ry and the 20th N. I. were detached in May and June to Noshky, where much severe and lasting sickness was contracted in the forms of fevers and bowel complaints. The 20th N. I. moreover, had ascended the Bolan Pass in February and had in consequence been exposed to very inclement weather, from which they were but poorly sheltered in their routies and against which they were not defended by sufficient clothing. It must also be borne in mind, that the Troops had suffered more or less during the cold season in Kuchee from diarrhœa, a complaint which though at first mild — so mild as but seldom to bring the soldier to Hospital, — yet that has proved very obstinate in those who unfortunately brought it with them to Shal. Again it may be repeated that the present year has been one of extraordinarily high temperature, the effect of which would be to enhance the strength of those influences which will subsequently be mentioned, as the causes of disease as it occurred among us.

*Table shewing the percentage of diseases and deaths among the corps stationed at Quetta, from the middle of April to the middle of September*, 1841.

| | April. | May. | June. | July. | Aug. | Sept. up to 13th. | Total Cases per cent | Deaths. per cent | Deaths. Total. |
|---|---|---|---|---|---|---|---|---|---|
| 1st, Troop H. B. | | | | | | | | | |
| Bowel complaints . . | .92 | 3.70 | 3.70 | 5.61 | 3.70 | 3.70 | 21.33 | .. | .. |
| Fevers . . . . . | 4.59 | 1.85 | 3.70 | 1.87 | 4.63 | .93 | 17.57 | .. | .. |
| Hepatic Affections . . | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Other Diseases . . . | 3.67 | 1.85 | 6.48 | 6.54 | 3.70 | 1.85 | 24.09 | .. | .. |
| Total . | 9 18 | 7.40 | 13.88 | 14.02 | 12.03 | 6.48 | 62.99 | .. | .. |
| H. M. 40, Reg. | | | | | | | | | |
| Bowel complaints . . | 3.15 | 4.21 | 5.19 | 7.67 | 10.50 | 2.90 | 3.62 | 2.01 | 17 |
| Fevers . . . . . | 5.60 | 5.03 | 15.46 | 17.59 | 21.48 | 10.64 | 75.80 | 1.54 | 13 |
| Hepatic affections . . | .23 | .. | .71 | 1.77 | .72 | .. | 2.43 | .12 | 1 |
| Other Diseases . . . . | 3.27 | 3 41 | 5.64 | 4.84 | 3.93 | 1.33 | 22.42 | .35 | 3 |
| Total . . | 12.25 | 12.65 | 27.00 | 31.87 | 36.63 | 14.87 | 134.27 | 4.02 | 34 |
| 21, Reg. N. I. | | | | | | | | | |
| Bowel complaints . . | 3.39 | 1.95 | 1.89 | 1.32 | 1.88 | .94 | 11.37 | .09 | 1 |
| Fevers . . . . . | 1.74 | 2.54 | 3.12 | 3.77 | 8.67 | 13.96 | 33.80 | .19 | 2 |
| Hepatic Affections . . | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Other Diseases . . . | 3.58 | 2.34 | 3.40 | 3.58 | 2.17 | .94 | 61.01 | .19 | 2 |
| Total . . | 8 71 | 6.83 | 8.41 | 8.67 | 12.72 | 15.84 | 16.18 | .47 | 5 |

Bowel complaints and fevers form the bulk of the diseases. In examining how far they are referable to local causes and peculiarity of climate, I begin with bowel complaint. It has before been mentioned that a great number of the Troops were more or less affected

with diarrhœa in Kuchee, and carried with them to Shal the disease or a strong tendency to relapse into it. Before we left Kuchee the weather had become warm, the mean daily temperature taking the last week, being 79° Fahr.; there was consequently a great change experienced on ascending to a mean daily temperature of 60° which we found it to be at Quetta, with a strong piercing wind blowing. This change is sufficient to account for the numerous admissions for bowel complaints which then took place among the Natives of India. We were now in an atmosphere in which from its diminished density and dryness, a more rapid evaporation from the surface took place than our bodies had been accustomed to, and when the heat increased, which it soon did in a rapid ratio, and the usual changes of the blood in the lungs were retarded, the skin came to perform a very active part as an excretory organ, and relieved the liver of part of its proper work as well as of the part of the lungs office of depurating the blood, which during their inactivity, would have been performed through an increased secretion of bile, in a dense and moist atmosphere with a temperature similar to what existed here. From the liver thus becoming less active, the bowels lost their ordinary stimulus and became deranged: the bile which evidently ceased to be eliminated through them in sufficient quantity became the cause of jaundice, another not infrequent disease which however showed itself in a mild form. This state of the bowels was, if neglected, often followed by an acute attack of dysentery or it ended in chronic dysentery with ulcerated bowels and sometimes abscess of the liver. What added much to the evil, was the inferior quality of the food furnished to the Troops; the butcher meat was often bad, and for sometime the bread was of a quality ill adapted for men who had a proclivity to this form of disease. An unvaried item in the Natives rations was Dhal, than which scarcely any food is more hurtful to them when thus afflicted. There was an almost total want of culinary vegetables; and an inferior sort of fruit, the produce of the orchards surrounding the neighbouring villages, was greedily eaten and frequently in an unripe state. Latterly there has been a sudden reduction of temperature with a continued dry state of the atmosphere and with increase in the body of positive electricity: in connection with these changes some cases of acute dysentery have presented themselves. Unless it be supposed that morbific exhalations of two distinct natures rise from it, the soil of the valley cannot be considered as the cause of the bowel complaints, for in the locality where deleterious miasmata show themselves to be in fullest operation by the inordinate num-

ber of fever cases that occur, there is not found a more than ordinary proportion suffering from affections of the bowels.

The above are the apparent causes of this complaint as it came under my observation, — they may be again enumerated, 1st Sudden change from a warm to a cold climate ; 2nd, The change to a rarer atmosphere ; 3rd, The rapid rise of temperature in the hot month; 4th, Inferior food and indulgence in bad fruit ; 5th, Change from hot to colder weather, with alteration in the quantity of idio-electricity. The first of these causes might be avoided by a little delay in the ascent of Troops from Kuchee in the spring months ; in the hot months it would not exist, and those coming from northern stations would not be affected by it. The hurtful nature of the second appears to depend on its connection with the third cause, it would be less powerful in the subsequent year than on the first arrival. The third cause, the rapid increase of temperature would be a permanent source of disease, and it appears to be a fruitful one among the inhabitants of the country. The fourth cause would cease to exist, were Troops permanently cantoned here ; a plentiful supply of vegetables might easily be grown, as the soil and climate are particularly favorable to the cultivation of most English vegetables. The fifth cause would be permanent — it is one which operates similarly in other countries and is yearly seen in considerable activity in the Dukhun, a careful adaptation of the clothing to the state of the weather is the best preventive.

Fevers on our first arrival from the warm climate below the Pass, while it was still cold here, were frequently of a congestive nature, the head or the lungs being the seat of the complication. When the hot weather set in, congestion of the brain again became a common accompaniment of fever, and most frequently in those who had been exposed to the sun or who had lived too freely. In the end of August and in September, remittents and intermittent became epidemic. The fever which has occurred toward the end of the hot weather and beginning of autumn, appears to be occasioned by miasmata. This opinion is strongly supported by the facts that it became prevalent when vegetation began to cease and the cultivated ground became exposed to the sun's rays, and that those situations which à priori would have been expected to abound most in malaria, are in reality the spots where this fever is most prevalent.

In explanation, I must first shortly describe the topography of Quetta. The town, as before stated, is at the bottom and nearly in the middle of the valley, and is on a highly irrigated level spot; this low part of the valley is fully under cultivation, with the exception of a piece of

meadow land, which from the abundant moisture, is always green. The commissariat stores are a little to the eastward of the town; and the residence of the Political Agent, the ordnance stores and the Lines preparing for the 20th N. I. are about three or four furlongs to the south-eastward on the same level, and surrounded with fields and watercourses. Lately H. M. 40th Regiment have been encamped on the low ground to the westward of the town. The HeadQuar ter's camp is about one and a quarter mile to the northward of the town upon the gentle slope which descends from the N.E. angle of the valley, and on ground which has never been under cultivation. The camp faces nearly S. W. on its right flank at a distance of about half a mile there is a low narrow line of cultivation and two or three villages. The wind has almost, without intermission during the day, blown strongly from the westward, and to its influence the Head Quarter or upper camp has been fully exposed, and I think this strong ventilation at this season is salutary, especially as the wind appears to pass over scarcely any irrigated ground on its way. The neighbourhood of the Political Agency, or what is called the lower camp, is from its low and sheltered situation in a great measure deprived of this ventilation. On the other hand, in August a light southerly breeze in the evenings brought a fog down the valley which came upon the lower camp, but in a much less degree, affected the upper; and this month the evenings and nights have been cold and generally calm, thus favoring the condensation over the lower ground of the noxious exhalations which the still powerful sun may have raised during the day; or there has been a gentle easterly air wafting these condensed malaria in the direction of the camp of H. M. 40th Regiment.

The adventitious circumstance of numbers of putrid carcases of camels and other animals being strewed about the lower camp, must add to its present insalubrity. That the lower camp is at this season particularly unhealthy is shown by the fact, that scarcely a Native of India or a European residing the reduring the last two months, has escaped an attack of fever; and a continued exposure to the pernicious air is frequently followed by enlargement of the spleen. But to particularize — the number of fever cases admitted into the Hospital of the 20th N. I. during the last eighteen days, has been 190; of these the detachment at the Political Agency of an average strength during that period of 92 has furnished 87 cases or 94.5 per cent of its strength, while the admissions from the portion of the Regiment in the upper camp has been 103 or only 14.7 per cent of its strength. Out of 200 Irregular Horse of the Upper Sind

Political Agency, at one time there were but 65 fit for duty, the rest being nearly all laid up with fever. The deaths from fever among this body of Irregular Horse have been numerous, whereas the sick of the detachment of the 20th N. I. from being removed for treatment to the Regimental Hospital in the upper camp, suffered comparatively little; no instance of the fatal termination of fever having occurred among them since July. The great number of fever cases in the 21st N. I. which is encamped in the upper camp, may be accounted for by its furnishing its proportion of guards and night piquets to the Town and to the Commissariat stores.

The number of fever cases among the Troops here, has hitherto been on the increase, especially among the European soldiery, and it is likely to continue great, until the very cold weather sets in.

The fever complicated with local congestion of which a few cases occurred at the time this force first arrived, is to be expected in greater proportion during the winter months, and then also inflammations of the lungs and other important viscera are likely to be of frequent occurrence. A sufficiency of warm clothing and good quarters are the prophylactic means which naturally suggest themselves; regular exercise ought to be attended to. The fever of the hottest months might be in a great measure prevented by providing good barracks and restraining the men as much as possible, as is done in India, from exposing themselves to the sun's rays. Wet tatties of juwasee, which grows here abundantly, might be used. It would be useful to have white covers to the caps worn by the European soldiers when off duty as well as on duty. The importance of having the head protected by a colour which will absorb fewest of the sun's rays, will be seen when it is stated, that at Mustoong which differs but twenty-five miles in latitude from Quetta, in the middle of July, the actinometer indicated the intensity of the sun's rays to be 189½° Fahr. Water at that station boiled at 203° Fahr. thus the heat produced by solar radiation was but 13½° below the boiling point.

The only effectual means of escaping the pernicious influence of the miasmata, is to avoid the localities where they are in fullest operation, and I know not of a spot near Quetta where greater immunity is to be expected than the slope on which we are now encamped, and about a half or three quarters of a mile to the eastward of our present ground, that is, nearly on the site of our first camp; there we should have the advantage of rather higher ground and be at a greater distance from the low cultivated belt which is on our right flank. On the other hand, there is scarcely a worse spot at this season than that occupied by the Political Agency, the ordnance

stores and the lines which are being prepared for the 20th N. I. When the intense cold of winter shall have checked the production of malaria, this last mentioned situation of course will be less objectionable, and it has the advantage of being more sheltered than many others from the winter winds: but until then, at any rate, it ought to be avoided. The ground on which the upper camp is pitched although at present probably too exposed for the winter months, might be sufficiently sheltered by hedges and walls.

It has been already mentioned that the present has been a year, of very unusual heat, and as far as the inhabitants of the valley are concerned, it has been one of more than common sickness, hence it is a legitimate inference that our Treops have suffered more than they would have done in other years; useful information on this subject might be obtained from the Hospital Records of such corps of the other Presidency, as may have been stationed here before the arrival of the Bombay Troops. The moral circumstances in which the Troops have been placed have been unfavorable, they have had the tedium and irksomeness of a long halt without amusements or anything to interest them particularly, and without any definite object in prospect.

After making allowance for the unusual heat of this year and the unfavorable circumstances, both physical and moral, to which the Troops have been exposed; and on the other hand taking into account the comparative absence of the means of drunkenness, that fruitful source of disease in permanant cantonments, there will, I fear, enough remain to warrant the conclusion that this is far from being a healthy place.

With regard to the eligibility of *Siriab* for a cantonment, I should expect it to be more unhealthy than our present situation: it is in a more confined part of the valley, and during July and August, a haze fills that part while the site of our camp remains comparatively clear. The water too, I should expect to be injurious from large admixture of saline matter; this I have not ascertained to be the case by analysis, but I observed the banks of the stream to be much incrusted with a salt.

*Mustoong*, which is situated S.S.W. of Quetta, in N. Lat. 29°43′ nearly, in another valley, has a climate, at least, during the hot months, very similar to that of Shal; the winds are the same and soil is the same but less stony. The ground on which the camp is pitched (to the eastward of the town at a little fort called Khoodawut) is high and intersected with deep nullahs, it is close on the east side of a continuous line of orchards which is several miles in length. The

valley appears to be more productive than Shal, and the inhabitants consider it more healthy. During the fews weeks that I was employed on duty at Mustoong, I met with the same shades of disease as at Quetta. There, also, there occurred some cases of fever and many of bowel complaints, that had their origin at Noshkee whither a detachment of H. M. 41st Regiment was sent along with the detachment from Quetta. The Company of European Foot Artillery at Mustoong, like the Troops of Horse Artillery at Quetta, has been more healthy than it would in all probability have been in India, where an unlimited quantity of ardent spirits could have been obtained by the soldiers. In comparing the state of health of the Artillery with the other European Troops, I cannot hazard an opinion as to the cause of their greater immunity from sickness hitherto, further than that in the case of H. M. 40th Regiment nearly the worst ground in the valley was latterly occupied by it.

Both at Quetta and at Mustoong convalescence from severe sickness is very slow during the hot weather and a cooler spot to be desired. Such a spot may be found when the neighbouring country has been more fully surveyed. Chughye, (or Kassasir close by it) has been thought of, but from what I saw of the place, I fear it would not answer.

The effect of sol-lunar influence in fevers is experienced to be as great here as in India.

In conclusion, I may enumerate some of the indigenous plants of this country which belong to genera, some members of which are possessed of medicinal virtues, from want of access in this place to books of reference, I am in many cases unable to determine the species.

The genera are avena (oats are found only in a wild state) allium, iris, daphne, rumex, rheum, veronica, salvia, mentha, marrubium, melissa, hyoscyamus, datura solanum, convolvulus, leontodon, centaureas, artemisia, achillea, apium, pastinaca, ranunculus, papaver, malva, althæa, rosa, amygdalus, euphorbia, ricinus, salix, juniperus, pistacia, adiantum. There are two species of pistacia that I have met with, both are found on the rocky bases of the mountains and in their ravines, one yields a resin like mastic and which is sometimes used by the hukeem as a substitute for it, the other yields a substance resembling in some measure Chian Turpentine. The juniper is a large arboreous species, its wood is the common fuel of this part of the country, its berries are possessed of much of the sensible qualities of those of its British congener, the juniperus communis, and I have tried their medicinal virtue and have found them to be

diuretic; the tree yields abundance of a resin that might be found useful in the arts. The salix (willow) yields salicine which is thought to be a valuable medicine in the treatment of intermittent fever, and a trial of the bark of the tree this season has given me a favorable opinion of it as a febrifuge. The poplar, a common tree here, but not indigenous, also yields salicine.

For the hurried manner in which I have arranged the information, that a short residence here has enabled me to possess, I must plead as an excuse the multiplied duties which have devolved on me on account of the sickness of some of my fellow medical officers.

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P. S. — A friend has just given me a portion of a crystallized saline mass which he found at Karez Dost Muhummed, two marches from Mustoong on the Kelat road, and which on analysis, I find to consist of 60.3 per cent of sulphate of Soda or glauber salts; and 39.7 of chloride of sodium or common salt, with traces of lime and of iron, but not in appreciable quantities; I detect no magnesia in it

An efflorescence that I found in a Karez at Mustoong, I ascertained to consist of the same salts with a very large admixture of carbonate of line. Salsola abounds in the neighbourhood of Mustoong.

# APPENDIX.

# APPENDIX.

## 1

**Catalogue of Medicines found in the Bazaars of Hydrabad, Khyrpur and Shikarpur.* By the late P. B. Lord, M. D.

1. KAYAPHUL. Sans. — Bark of a tree unknown ; brought from Bombay and other parts ; of a dull red colour, no taste or smell ; thick, light, and friable.—Use-reduced to powder is snuffed up for cramp.

2. JUMBU. Bark. H. and S. *Eugenia Jumbolana.* Roxb. — Bark of a tree that grows in Sindh. Use — reduced to powder ; is sprinkled on fetid ulcers for which its astringent properties may probably render it serviceable. The specimen appears perfectly inert from having been too long kept. The tree bears a berry which is eaten.

3. MUNDERI. H. and S. -- Found every where in Sindh. Used as a cataplasm for any external inflammation : sometimes given internally in powder with sugar for gonorrhœa ; dose one tola. Parts used, root, leaves and seed ; Taste mucilaginous.

4. KALA DHATURA. H. *D. fastuosa.* Willd. — Black seed found in jungle in Sindh, more especially on any slight eminence. Dose three masha ; strong purgative.

5. HURMUL. H. and S. *Rutaceæ.* — Grows in Beluchistan and Sindh, on hills and about tanks. The powdered seed given in fever ; dose uncertain. Used

* — I have endeavoured to indicate the language from which each name is taken and for this purpose have used the following contractions P. signifying Persian. H. Hindustani, S. Sindhi, Sans. Sanskrit, G. or Guz. Guzarathi, Arab. Arabic, Punj. Punjab ; but as I have no pretentions to be a philologist I fear I must claim indulgence for numerous errors in this part of my task.

The list of botanical synonyms is rather meagre, but except Roxburgh and Lindley I have not a single book of reference. It probably may be much increased out of Ainslie which I regret to say I have not with me.

The uses attached to each medicine are such as the native practitioners are in the habit of attributing to them.

I have given the locale from which each article was said to be brought, but the frequent recurrence of the name Khorasan induced me to inquire respecting it, and I found the native idea attached to that name, included all the hilly country west of the Indus from the Hala mountains to the confines of Persia. P. B. L.

*NOTE BY THE SECRETARY. — The publication of this Catalogue has been delayed till the present time, from a desire on the part of the Committee to indicate those articles which are procurable in the Bombay Bazaar. Circumstances have prevented the accomplishment of this wish, and the Committee are unwilling to withhold any longer this additional proof of the industry and zeal of its lamented author.

also in rheumatism as a fumigation said to be very powerful in its effects; no obvious result except slight catharsis and when used as a fumigation diaphoresis. Taste bitter rather nauseous; of fresh plant extremely bitter. To be had abundantly.

PUNIR. S. *Physalis!* —Beluchistan, Afghánistan, hills abundant. Part used. capsule containing seeds imbedded in bitter mucilaginous matter, infusion used as laxative for children.

7. HUSWAK. P. — Beluchistan part used leaves and twigs forms a cooling infusion used for heat of body.

8. GULDUR. P. — Hills, Parts used leaves and twigs; reduced to powder and mixed with some liquid is administered to infants and occasionally adults for fever.

9. DRAMMAU. S. — Fragments of a small thorny shrub with five locular capsules found in Sindh. A decoction of these is used in inflammatory fever.

10. LASURI. *Cordia myxa.* Roxb. — Drupe — grows in Sindh. Decoction used as purgative. Taste bitter-sweet; given in mixture with other medicines.

11. KHUTSU. S. P. — Taste and smell like tea. Small slender brownish leaves said to be found in hills, by which I understand them to mean Bunnoo, Bungush, &c; used externally as a cataplasm.

12. UNAB. P. — The Jujubee of Khorasán used as a purgative and occasionally for coughs. Taste slightly sweetish.

13. WURIALI. S. H. (Sorif) *Pimpin : Anis :* — Anise seed used as a carminative and generally to flavour other medicines, grows abundantly in Sindh where it is sold at twenty seers the Rupee. A duty of a quarter Rupee per maund is exacted.

14. BUKRU. S. — Sindh small thorny capsule; yellow flower; ground and mixed with sugar is used as a tonic.

15. BAL HYRA. S. — Drupe said to grow in Malabar and to be brought here from Bombay. It is a powerful purgative and is given in powder or decoction or fried in ghee or in castor-oil. For children it is made into a confection.

16. LEDI. S. — Bark of a tree; thick; fibrous; taste slightly bitter; brought from China; gound down on a stone is applied to the eyes in acute ophthalmia.

17. KUDDU-KA-BIJ. *Cucurbita lagenaria.*—Seed of a white pumpkin; Sindh, mucilaginous cooling.

18. KAMU. S. — Seems to be a mixture of three or four different kinds of leaves said to be got in the fields and used as a cataplasm.

19. KASNI. P. and S. *Cichorium.* — Sindh; a cooling decoction used in fevers, gonorrhœa, &c. A decoction of the seeds is also employed for making shurbut.

20. GURFA. S. — Small seed with hot taste like carraway; used as carminative for little children.

21. WALL. H. Q. *Dolichos Lablab.* — A pea-black with white scar used in Dhukhan as food— here used by women with alum to form astringent balls — used also internally as astringent.

22. WAVERING. H. — Small black capsule fluted on sides — brought from Bombay — Vermifuge — applied externally for headaches.

23. METHE. H. HURBA. S. — Brought from Kabul but now said to be grown in Sindh. Green leaves used as a vegetable — seeds used in medicine

mixed with hulwa (confection) and said to be very efficacious in rheumatism Taste slightly aromatic.

24. BADRUNG. P. & S. — Seed of a cucumber found in Sindh cooling infusion.

25. NILOFER. P. *Nymphœa lotus.*— Grows in Sindh by all dhunds or tanks. Capsules resembling those of poppy but smaller. The syrup is used in fever — a medicine distilled from its leaves is refrigerant and tonic.

The root is supposed to possess aphrodisiac properties.

26. CHUNUKNI. S. BHAWA. Sans. UMULTHA. H — The pods of Cassia fistula. The pulp is used as a purgative, the seeds and external corium being rejected.

27. UNT-KUCHUR. S. *(Camel-root)* — Root brought from Khánpur near Buhawulpur ; bitter aromatic taste ; used internally for gripes ; also externally in water as a lotion by women who suppose it gives their bodies a fragrant smell.

28. ANGHAR. S. PUKANHED. Sans. Gentian? — A root tortuous — thick as a finger ; light brown externally ; dark internally ; no smell ; dry bitterish taste. Brought from Kot Gungur north of Attok. Astringent ; used for dysentery dose ʒj to ʒiss — powerful.

29. KANNA. S. — Small round grain found in Sindh — tastes like vetch tribe to which it probably belongs. Used as a poultice in rheumatic attacks.

30. BHILAWA. Sans. *Semecarpus Anacardium.* — Marking nut brought from Goa ; applied externally as rubefacient for chronic rheumatism, indolent swellings, &c. The natives also use it in some of their mixtures for encreasing sensual powers, and it is said to be safely taken internally if mixed with cocoanut oil.

31. KOLIJUN. S. PAN-KEE-JU. H. — Said to be the nut of the plant (piper betle) from which the betel-leaf is procured. Taste hot and biting. Use — for cough — griping pains — to flavour liquor with which it is distilled — and in confection. Brought here from Kurachi.

32. KABABCHINI. H. Cubebs. — Brought from Bombay ; used in a very fine powder for watery eyes ; used also for toothache and to diminish salivation. Use in gonorrhœa not known.

33. KATHIKINI. S. *(lit. rotten stick).* — Khorasán a root wrinkled thick as a caterpillar — taste bitter, slightly aromatic — use stomachic.

34. WALLJOWAN. S. — Abundant in Sindh — small grain with aromatic taste and smell like carraways ; used by women after delivery. Dose ʒj.

35. SPUNGER. S. ISUF-GUL. H. *Psyllium?* — Abundant in hills — small seed mucilaginous and astringent, is used in gonorrhœa and mixed with pomegranate bark in dysentery. It is also made into a shurbut.

36. TUKHON-I-VALUNGA. P. — Seed black linear — got from Dera Ghazikhan used for shurbut and drank freely when there is much burning in clap — also in dysentery with other medicines, large dose astringent, small cooling.

37. KHAKSHI. *Abrus precatorius.* — A very minute reddish coloured seed from Kandahar. — used for a cooling shurbut in hot weather.

38. SHAHBELUT. S. SITUL SUPARI H. *Areca Catechu.* — Nut imported — powerful astringent in doses of ʒss. — ʒj of the powder combined with opium.

39. BALDY. S. — Small black seed found in Sindh. Said to possess astringent and aphrodisiac properties.

40. Wuduwul or Mauri. S. — Imported. Fragments of leaves and twigs of a yellowish colour, aromatic taste and faint smell, used in preparing sweet smelling powders for washing. Sells here at one rupee per three seers.

41. Krukathi. S. Bitter Stick. — Twigs and root of plant brought from Jaysulmere. Used to physic horses after they return from pasture. The powder also is employed for rheumatism in doses not exceeding ʒii.

42. Podina. H. *Mentha.* — Mint brought from Khorasán and sold at fourteen seers the rupee. Eaten for indigestion; applied warm as poultice for pain of belly. No oil or spirit extracted.

43. Pahari Chanrol. H. — A rice which is said to grow spontaneously on the hills of Khorasán. It is used by the Hindús here on occasion of feasts and other religious observances. It is said to have an astringent effect and is given in dysentery.

44. Sorif-ki-jir. *Pimp : anisum.* — The root of the anise plant. It is placed all night in an earthen pot in the moonbeams. In the morning it is ground and being mixed with sugar and water forms a draught supposed to possess particularly cooling properties.

45. Sumak. *Rhus coriaria.* — Kandahar and Khorasán. A small round seed with an acid taste, always used by the natives in their curries.

46. Gul Shapur. *Poliunthes tuberosa?* — From hills to Khorasán. Leaves, seeds, twigs and flowers, of a lilac colour, all mixed together and infused in water are used to form a cooling shurbut.

47. Mumira. H. — From Yarkund. Root of plant said to be useful for dimness of sight; ground on stone, and applied externally.

48. Kali Mulli. — Khanpúr; astringent; generally used.

49. Kinera. S. *Nerium odorum.* — Grown in Sindh on bank of river. Very minute black seed; astringent; shurbut.

50. Kulfa. S. H. — The plant is used as a vegetable the seed which is extremely small and black is said to be cooling and is used for gonorrhœa.

51. Mithi Kathi. S. *Glycyr : glabra.* — Literally sweet stick. Common liquorice grown in Khorasán and used for coughs.

52. Untgum. S. — From Dadur. A seed used in confections and as an aphrodisiac.

53. Zrikuchla. S. H. *Nux vomica.* — Brought from Bombay and Peshawur; used externally for rheumatism and toothache. An oil is extracted and employed in preparing an intoxicating confection.

54. Musag. P. — Bark of a tree from Khorasán; no smell; taste slighly bitter. Native women use it to colour their lips; occasionally used as an astringent.

55. Chupala. S. — Best comes from Marwar; an inferior sent from Bombay used in Musála (spicery) and also in perfumes. Leaf black on one side and white in other.

56. Gao Zuban. H. Bugloss. — Khyrpúr where it grows; leaves and twigs all marked over with little white spots; used as a tonic after fevers, also as a stimulant; is always exhibited in decoction.

57. Marmut. S. — Cuchí about Dádur, powder of root used for wind in stomach. Taste bitter nauseous.

58. Khabazi. S. *Malva Mauritiana.* Roxb. — Grows in Scindh. Decoction of twigs and capsules is used in fever and rheumatism; also in preparing confection.

59. GIDRA-KA-BIJ. S. KHURBOZA H. *Cucumis Melo.* — Sindh. Seeds of musk melon used in the preparation of a shurbut and supposed to possess aphrodisiac properties.

60. KAUL-I-PERU. S. — Sindh : a slightly saline taste. Seeds expectorant used for cough; stem for jaundice.

61. AJWAYAN S. H. *Ligusticum Ajowan.* Roxb. — Found throughout Sindh : small seed ; taste of dill; used for pain in stomach.

62. SENNA. S. *Cassia Senna.* — Grows abundantly in jungle near Khyrpúr also about Shikarpúr. Purgative.

63. KUTKATHI. H. — From Malwa and Bombay. A root used mixed with oil for the cure of rheumatism. It is also employed as a perfume and is sometimes mixed with tobacco to improve its flavour.

64. KATH GULABI. *Catechu.* — Got from Lahor ; astringent; used with cardamoms for pain of teeth and gums : — used also for dyeing : and applied externally with camphor on foul ulcers.

65. MORA CUCHEE. S. — Leaves used as poultice in acute opthalmia ; powder given in gonorrhœa.

66. PIPLI H. *Piper longum.* — Long pepper brought from Bombay. Sells at 12 annas the seer ; use, carminative.

67. TUKHM-I-KAHU. P. *Lactuca Sativa.* — Seed resembling the carraway in appearance ; brought from Khorasán. Ground and drank with sugar as a cooling draught.

68. BHERA. H. *Terminalia Myrobolans.* Roxb. — Imported from Hindustan. A hard horny fruit : kernel used as a purgative. Dose ℥vi.

69. CHUKSO. P. — A small pointed black seed ; grows in Sindh and Cutch. Powder put into the eye for ophthalmia : used internally for Rheumatism. Dose ℥iii.

70. AHUBER. S. — Khorasán. Berry with a strong taste of turpentine; very good for pain in stomach ; also infused in oil and applied externally for rheumatism.

71. YARALONG. S. RUTTUNJOT. H. — Chips of bark of tree brought from Marwar and used as cataplasm for horse.

72. PLASPAPRA. H. *Butea frondosa.* — Seeds of palas or butea frondosa ; a powerful purgative and anthelmintic. — Cuchee, Daraja, and said to be found in Sindh on banks of river.

73. KUTTI CHUMRI. S. — Pleasant, sweet, subacid, dried fruit, having the appearance of almond shells. Khorasán ; laxative ; used by goldsmiths to clean gold and silver.

74. NINDAJA OR PHAGURWAL. S. — Grows in Sindh. A thorny capsule with four septa ; used in fever and rheumatism : has purgative qualities.

75. PANERI OR LATTUK. S. — Fragments of leaves brought from abroad and used as perfume. Sold at one rupee for two seers.

Note. To me this and other articles said to be Khushboi (perfumes) have no smell, nor can I understand why so high price should be paid for them.

76. KHUTMI. P. *Malv ?* — Sindh ; used as refrigerant drink in fever.

77. PIPLE MED. H. — Root of No. 66. Decotion given as tonic after fever.

78. KEWAL. S. — Sindh ; Cutchee. Used in fever ; refrigerant.

79. JERA. H. *Cuminum Cyminum.* — Cumin seed ; Sindh ; abundant. Used as carminative, also in currystuff.

80. Sonputri. S. — Cutchee and Sindh. Used as cataplasm for pain in ear.

81. Kundru. S. — Gum from Arabia. Used for toothache and as a strengthener. Applied externally for rheumatism, on the chest for cough, and generally for any acute pain.

82 Kuttala. S. — Gum from Khanpur. Strengthener.

83. Kummer-Kush. S. — Fine red gum (Kino ?) from Marwar; most powerful astringent.

84. Dhup. S. Resin. — Common yellow. Brought from Bombay. Used for ointment, also in dyeing.

85. Bheduk. S. — A stone said to be applied externally on boils.

86. Pitkudi. S. — Alum got at Hurmul-Chandea's and Cutchee. Medicine and dyeing.

87. Kala Lon. P. Khar. S. — Black salt used as purgative with other medicines. Dose 3ii ; used also in dyeing.

88. Surmah P. — Antimony ore got at Surmah-Sing, between Sonmeanee, and Khelat. Sells here at 20 rupees per maund, in Khelat Rs. 5 per maund. Used as collyrium.

89. Gogiad. P. — Sulphur. Native near Bagh, when melted called gogru.

*Catalogue of Medicines found in the Bazaars of Bahawulpur, Dera Ghazi Khan, and Dera Ismael Khan.*

1. Kakursingi. H. — Khorasán. Reduced to powder is used for cough. Dose grains xx with honey one tola: price, one seer one rupee.

2. Papita. P. *Strychn : Colubrina.* Roxb. -- Khorasan. Most efficacious against the venom of a snake bite if rubbed on the part. Internally it is used for fever and is said to allay vomiting. One tola two rupees.

3. Post-i-jurjur. P. — From Jurjur. Taste bitter; aromatic; slightly mucilaginous. Dose one rutty. Tonic aphrodisiac : price two annas for one skin.

4. Tukhm-i-Hulyun. P. *Lipidium Sativum.* — Khorasán. Very minute seed: no smell ; little taste ; light brown colour : used for preparing shurbut and confection ; strengthening : one tola one rupee.

5. Bhurungi. P. *Verbesina Prostrata.* — Khorasán. Used for cough, asthma. Dose one masha. It is also employed as a fumigation for decayed teeth, and is said to bring out worm that causes the decay: one tola two annas.

6. Mitha. H. — Khorasán. Burnt with onion or brinjal is used as an aphrodisiac, and said to be very powerful. Each fruit one anna.

7. Chobgulo. P. *Menispermum glabrum.* — Cutchee (hill country). Slightly mucilaginous. Used for cough, dryness, fever, and want of sexual powers: two seers one rupee.

8. Biswach. Islameul. P. — Given in fever, splenitis and stone in the bladder ; said also to have tonic and aphrodisiac properties ; one tola two annas.

9. Tukhm-i-Gunjal. P. — Khorasán. Black seed, seems to be a vetch : has stimulating properties, and is given mixed with pearls as an aphrodisiac.

10. Kulthi. P. *Dolichos Biflorus* — Hill of Jummu. Used for strangury ; stone in the bladder ; also for lying-in women ; one seer two rupees.

11. Gulgafiz. P. — Khorasán. Tonic astringent : used as an aphrodisiac. Taste slightly bitter and aromatic.

12. Konarung. P. — Khorasán. Slightly saline taste ; used by Kimígurs (alchymists) to make silver ; one tola one rupee.

13. PUBBRICA. PITHA. H. — Khorasán. Sindh. Leaf and seed of nymphœa: used to check vomiting; astringent.

14. KHUN SHASHA. P. —Kerbála, a gum (lac); strengthening; used in confection; one tola four annas.

15. MULATHI. H. *Glycyrrhiza.* — Dájul near Mithun. Liquorice root; used for cough, dryness, &c. two seers one rupee.

16. GHARIKHUN P. *Agaric.* — Irán. Strengthening; used in confection; one tola one rupee.

17. GUL-UBBAS. P. — *Mirabilis jalapa.* Buhawulpúr. Aphrodisiac.

18. TUBASHIR. P. — Imported. Got from Bambú; astringent: used as gargle for sore mouth; one tola six annas.

19. SHAHUDNACH. P. — Bokhara. Diuretic; one seer twenty rupees.

20. KHEDRU. P. — Khorasán. Used for dryness, in confection.

21. SUT-I-GULO. P. — Extract made from No. 7; white starch-like. Used for cough, dryness and heat of body, fever, and as a tonic.

22. BASA P. — Khorasán. A leaf of green colour; smell tea-like; taste slightly mucilaginous and bitter; used for cough.

23. GULPISTAN. *L. Pistacia?* — From the East. Used internally to enable women to bear children; dose two rutty.

24. GULABKABIJ. P. and S. — Indigenous rose seed. Used by women in combination with other matters to form astringent balls.

25. JUFT RUMI. P. — Roum. A gum with slightly aromatic taste. Used in confection and generally in the preparation of aphrodisiacs; one tola sells for three rupees.

26. HUBBAKAK-I-BIJ. *Arab.* — Khorasán. Aphrodisiac; in large doses, purgative.

27. ZURNIKH. P. — Khorasán. A root resembling turmeric. Used as aphrodisiac.

28. USHUN. P. — Impure liquorice from Khorasán. Used in strengthening mixtures.

29. TAJUN. P. — Khorasán. Aphrodisiac.

30. TOOKHMIFERUNG, MOOSKH. P. — Khorasán. Shurbut: one tola eight annas. Qr. seeds of Vinka Rosea?

31. AFARUND. P. — Khorasán. Some dried fruit; mucilaginous. Used as strengthener; one tola one anna.

32. JURED-I-BEDUSTAR. P. H. — China. (Castoreum). Most powerfully aphrodisiac; sells at eight rupees for one tola.

33. MA-I-SHUTUR. *Arab.* — Arabia. Extremely powerful aphrodisiac. It is made by allowing a camel's calf to drink once of its milk; the calf is then killed and the coagulum found in its stomach is this Má-i-shútur. It is applied externally and sells at nine rupees per tola.

34. UFSUNTIN. *Absinthium.* — Khorasán. Fever; cough; tonic.

35. KURAYAT-KI-PAR. CHERAYTA. H. — Khorasán. Bitter; given in fever; in large dose it is laxative; in small, tonic; one tola three annas.

36. GULI MALIM. P. — Khorasán. Seems to be dried rose leaves. Used as perfume and tonic: one tola one rupee.

37. FURFURYUN. P. — Khorasán. A gum; tonic; aphrodisiac.

38. NILKUCHU. H. — Khorasán. A gum very strengthening.

39. MUHMIRA. P. — Khorasán. Externally for dimness of sight.

40. Brkh-i-Kakela. P. — (Cardamom root) powerful tonic. Khorasán.

41. Gul-i-Mamool P. — Khorasán. Aphrodisiac; in large dose laxative. Used in decoction for toothache.

42. Tukhm-i-Kusur P. — Kabul. Shurbut. Astringent.

43. Tukhm-i-Paluk. P. *Justicia.* — Indigenous; cooling.

44. Siah Ajowan. P. — Khandahar. Hot tonic: used in jaundice.

45. Ajmud P. *Opium.* — Bikanir. Grows also in desert. Hot; aromatic; (thyme or parsley ?) four seers one rupee.

46. Loda Subz. H. P. — Umritsir. Used for dyeing; astringent.

47. Pukanbed. *Gentiana.* — Umritsir. Carminative.

48. Tanocha. — Umritsir. For palpitation of the heart.

49. Krukutki. — (Lit. bitter stick). Umritsir. Used for horses; also occasionally for men as a tonic.

50. Kuttichumri. — (Lit. Sourskin) Kabul and Khorasán. Used by goldsmiths to clean gold and silver, also in curries: large dose laxative.

51. Tukhmi-khyr. P. *Cucumis Sativus.* — Indigenous. Seed of a melon: cooling; moist.

52. Hirby. Punj — From Nagowalla pahar, i. e. hills infested by snakes. I could get no more particular account of its locality than this. It is used for snake bites, and I am inclined to look on its efficacy as tolerably well established, inasmuch as I obtained a bit of this very same plant from a Bazigur or snake-charmer, whom I met at Multan, and who instanced his own experience of its powers.

53. Lod Sufaid. Punj. — Umritsir. Eye complaints: externally.

54. Nagkesur. H. *Mesua Ferea.* — Umritsir. Used in Menorrhagia; specimen seems quite inert.

55. Sena Mukki. H. — Indigenous: laxative.

56. Howai Jira. — Meeapur. Splenitis: used for children.

57. Bahara. H. *Termin. myrobalan.* — Jummu. Cathartic: used for children.

58. Hub' ul Kudrat. *Arab.* — (Lit. God's own) Khorasán. Astringent, and aphrodisiac.

59. Lod Muchuck. S. — Khorasán. Dyeing leather, five seers one rupee.

60. Koakuni. *Punj.* — Indigenous, in bank of river, used by women as an externally astringent.

61. Sawan. S. — Duraja in Sindh. Cooling; used for children; in large doses given to horses when griped.

62. Turvikathi. *Punj.* — Pale, Cathartic.

63. Chawaker. *Punj.* — Khorasán, Native rice, tonic; used by Hindus during fasts. Two seers one rupee.

64. Khurbozaka bij. H. *Cuc. mels.* — Indigenous, heating, mixed in preparing bhung. Six seers one rupee.

65. Podina. P. *Mentha Sativa.* — Dajul. Used for Horses; given in decoction or powder for gripes.

66. Tukhm-i-Kutusha. P. — Cutchee. Cooling; shurbut.

67. Wavering. H. — Umritsir and other countries. Used to expel worms from children.

68. Satur Murwa: *Origanum.* — Some sort of Marjoram. Used for wind in the stomach. Brought from Khorasán.

69. Badkumkhutai. P. — Khorasán. Taste like almonds; aphrodisiac.

70. MOCHRUS. *Hyperanth: Moringa.* — A red gum got from Horse-radish tree, is carminative, astringent, tonic and aphrodisiac.

71. TUKHM-I-KAHU. P. *Lactuca Sativa.* — Indigenous; cooling.

72. PUNIR. P. & S. *Physalis.* — Dajul. Laxative. Used for children.

73. JAOZE MUKUDDUR. P. — Jubbu ka pahar. For horse.

74. SOKSAMUNDUR. P. *Courolontus Argentius?* — Indigenous. Bank of river. Astringent and aphrodisiac.

75. SHATURA. P. — Indigenous; cooling.

76. USMAN PURI. P. & H. — Desert. Used by women as external astringent.

77. AJOWAN. H. *Ligusticam Ajowan.* — Indigenous. More generally cultivated; sown in Asú, gathered in Vesák; sells at twenty seers the rupee, aromatic, carminative and aphrodisiac; whence the proverb: —

Kahi ajowan,
Bude ka hoga juwan.

78. PAZIHR. P. *Bezoar.* — Khorasán. Antidote. Used internally for snake bite or after the administration of posion: got from the intestines of several of the deer and goat species; sells at twelve rupees for one tola.

79. AJMUDA P. *Vittate.* — Khorasán. Tonic; large dose narcotic. Used for jaundice.

80. BALTUNGA. P. — Vellait. Stimulant; aphrodisiac.

81. SHAHBALUT. P. *Quercus belut.* — Vellait, (Afghánistan). Used as astringent and aphrodisiac. — N. B. It seems to be an acorn.

82. KUL KATHE. H. — Umritsir. Astringent.

83. JIRA. H. *Cuminum Cyminum.* — Dajul. Aromatic and carminative. Used for griping, wind in stomach, also in curries.

84. GIRUCHUN. Arab. — Arabia. Used for enchantment.

85. FUNDUK. P. — Khorasán. Tonic.

86. PISTA. H. P. — Khorasán. Astringent. Used by women. Said to be pistachio nut; not to be inferred from the specimen.

87. ISHK-PECHA. P. — *Ipomœa quamoclit.* — Indigenous. Used as cathartic, but causes much griping.

88. KHUBKALAN. P. — Vellait. Astringent.

89. WALUR. QUZUR. — Indigenous. Used as an external astringent by women.

90. JIR-ISHK. P. — Khorasán. Aphrodisiac.

91. BABCHE. H. — Umritsir. Pounded and made into an ointment with oil: is used to cure itch. In decoction is used to wash unhealthy sores.

92. KULFA-KA-BIJ. — Indigenous. Cooling; moist; cathartic.

93. GUGUL. H. *Amyris agallocha.* — Dajul. Cures cough in horses; also used as poultice to boil; rubbed in for rheumatic pains: (a gum).

94. REGMARI. P. — Arabia. Applied in paste as an external aphrodisiac; said to have great power, for which the practitioner referred to his own experience. one tola four rupees. It seems the exuviæ of some small snake.

95. NEM-BOLE. H. *Melia azadarachta.* — Indigenous. Seed of the Nim: used in poultice for *Hæmorrhoids:* used also for headache.

96. WADAWUKA-GUL. P. — Umritsir. Astringent.

97. BUKAN. P. *Melia Sempervirens.* — Khorasán. Externally for Hæmorrhoids.

98. MEDAH-LUKRI. H. — Umritsir. Wind in stomach.

99. BILGARI. P. — Jummu. Powerful astringent. Dose one masha.

100. TUKHM-I-BALUNGA. P. — Indigenous. Cooling: makes good sharbet.

101. TUKHM-I-MORID. P. — Khorasán. Cooling; moist.

102. KUMMER-KUSH. P. *Kino?* — Jummú. A very astringent gum use by women as external astringent: three seers one rupee.

103. TUKM-I-SURELA. P. — Indigenous; diuretic.

104. BURG-I-MORID. P. — Leaves of No. 101. Cooling, moist.

105. TUKHM-I-HALA. P. — Indigenous. Tonic, hot, stimulant; used in rheumatism.

106. BAZGUND. P. — Khorasán. Cooling: used for cough, for silk-dyeing; also by women as an external application.

107. HUNDA. H. — Jummú-ka-pahar. Cathartic.

108. KUTUHUL. H. — Hindustan. Astringent: used by women.

109. BABUL-KA-GOND. H. Mimosa. Arab. — Indigenous. Indifferent gum-arabic; used to give strength; also as confection.

110. KUCHUR. *Curcuma reclinata.* — Bikanir. Decoction used as a laxative for children; the powdered root is snuffed for headache.

111. BEHMUN. H. — Umritsir. Strengthener.

112. REWUN-CHINI. *Rheum.* — Rhubarb imported from the north: used externally for boils and internally as a laxative: sells here at eight rupees the maund.

113. INDERJAUSHERIN. H. *Nerium antidysentericum.* — Hindústan. Aphrodisiac.

114. INDURJAU-TULKH. — Hindústan. Purgative, vermifuge; used also for rheumatism.

115. PUTISA. P. — Khorasán. Used in confection as a tonic and aphrodisiac: is very bitter.

116. HUBAR. P. — Cutchee. Carminative; used for children.

117. HARITA. H. — Dilhí. Washing silken stuffs.

118. KUSHKUSH. *Papaver.* — Indigenous. Cooling medicine; used in decoction for cough: (poppy seed).

119. DHUNNIA. Guz. *Coriand. Sativ.* — Indigenous. Used in spicery for griping, wind in stomach; and sells at one and a half rupee per maund. (Coriander).

120. HURMUL. *Ruta Hurmala.* — Indigenous. Dry open jungle; used for pain in stomach, wind, also in fumigation to expel devil from men's bodies.

121. SORIF. H. *Pimpinella anisum.* — Indigenous. Mixed with cathartics to prevent griping; distilled for sharbet; used in pilao, sweetmeat, curries: used in gonorrhœa: six seers one rupee.

122. KASNI. P. *Cichoreum intuba.* — Indigenous. Cooling; gonorrhœa.

123. HURBA. H. *Terminalia Citrina.* — Umritsir. Cathartic: five seers one rupee.

124. PIPLI. H. *Piper nigrum.* — Dilhi. Rheumatism; griping: one seer one rupee.

125. JIRA-SIYAH. P. — Manvar. Horse medicine; also used in decoction for fever.

126. SAKUR. S. MAI U'KAKI. P. *Tamarix diœcia.* — Tamrisk. Gall nut got of the male tree. Indigenous: used for dyeing chints; by women as an astringent: one maund sells for two and a half rupees.

127. MUNJIT. *Rubia tinctoria.* -- Ghuzní, Kábul, Yarkund. Dyeing chintz; decoction, tonic; four and a half seer for one rupee.

128. GIRNULLI. S. AMULTHAS. P. *Cassia fistula.* -- Indigenous. Umritsir, Sindh. Extract cathartic; sells at four seers the rupee.

129. SUJJI-KHAR. H. -- An impure carbonate of soda got from the lána (Salsoda); a desert plant; indigenous; used for washing, dyeing, making glass, given for cough; in large doses laxative; taste saltish; one maund sells for ten annas.

130. PITKURI. H. -- Kálabágh. Var. Red Alum. Washing; dyeing, astringent; burnt is made into gargle for ulcerated mouth; six seers one rupee.

131. LON. H. -- Pind-dadumkhán. Common salt.

132. PITKARI. H. -- White alum from Dajul. three seers one rupee.

133. IMAM-SUNBUL. P. -- Arsenic (sulphuret?) country not known; one seer four rupees. Chemical.

134. FIROZA-ZURD. P. -- Arsenic ( ?) Irán: chemical; one seer two rupees.

135. SUNKIAH. P. Arsenic Do. Do. Do.

136. SUNG-I-LAJVURD. P. -- Khorasán, Kábul. Used in confection mixed with pearls and spices as an aphrodisiac. The specimen is a pretty one of Lapis Lazuli. Contains pyrites.

137. REG-MUSAN. P. -- Khorasán. Stone in the bladder; gravel; dose half rutty; one tola five rupees.

It seems to be merely tabular crystals of an impure salt.

138. KUJ. PUNJ. -- Khorasán. Used in indigestion; seems still to be only impure muriate of soda: but I have tried no test.

139. ZURD SUNKIAH. P. -- Country not known; chemical: one seer four rupees. A small dose is given in obstinate intermittent fever; he says half rutty (sulpt. arsenic).

140. PISTAKHI SUNBUL. P. -- Khorasán. Another preparation of arsenic; chemical.

141. KHUJAMUN. Sindhi. -- Bokhara. Looks like crystallized gypsum, and tastes not unlike alum: used as astringent by women: one tola one anna.

142. RUSKAPUR. P. -- Bombay, (Oxy. Mur. Hydrarg.) to produce salivation in venereal; small dose aphrodisiac; chemical: one tola four annas.

143. IHSANI SURMAH. P. -- Irán. Used for dim sight: one tola eight annas (antimony ore).

144. HAZAR SUNG. P. -- Khorasán. Burned is used in confection as an aphrodisiac; one tola one anna. (Filamentous gypsum)?

*Catalogue of Seeds, Roots, &c. collected between Mithunkot and Dera Ghazi Khan.*

1. NAPO. Punj. KAOUNUL. H. — The lotus -- *Nymphæa Lotus* — Got in dhunds or pools of standing water. Seeds used as a cooling medicine Made into bread by poor people. Seeds collected in Budru (Sept.) or Asu (Oct.) Plant spring up in Jeth (June).

2. LOHUR. S. — A sort of tuber or earth nut used as vegetable. Taste not unlike indifferent potatoe; skin thick, wrinkled hairy and dark; tuber internally white.

3. KUDER, Punj. — A sword-leaved juncus. — Leaves used for making mats; also for the manufacture of a rope which from its softness is used by the boatmen to put round their bodies when tracking their boats. (V. specimen.) Root given to cows and buffaloes to encrease quantity of milk; shape of root like ginger; externally black, internally white; tastes sweet; grows in banks of river principally above Mithun where inundation is general. The fruit is used as a vulnerary. It forms a long soft glumous head resembling tinder or sponge; the office of which it probably performs. A yellowish sweet farina is also extracted from this head (probably when it contains the blossoms) which the natives knead with water and make into cakes. I think I put a specimen of this also into the box, it had much the appearance of a lump of gamboge, but was soft and crumbling.

4. IMLI. H. *Tamarindus Indica.* — The seeds used as astringent. Pulp of pods cooling and laxative. Dose 4 to 6 tolas. Used also, in shurbut and curry.

5 LASURA H. *Cordia Myxa?* Roxb. — A sorts of plum. Grows generally over country called Bokra in the Dukhun, where it is used for pickling. Used here as strengthening medicine: the tree is very large.

6. PUBBUN. Punj. — Described also in a speices of Nymphæa found always in dhunds. Stalk of the plant called *bah* used as an astringent. The juice extracted from the root by incision is used in looseness and vomiting; is also considered diuretic and cooling. Seeds eaten as fruit.

7. MOTIAN. — Red rice — grows near Mithunkot.

8. KAYSAPHUL. Punj. — Flower used in dyeing. Seems to be the flower of *Butea Frondosa.* Says it is found in abundance in the jungle at Ahmudpúr, Buháwulpúr and generally in the Daúdpútra country. Flowers in Jeth (June)

9. LALRE CHUNNA. Punj. — Red gram.

10. RUTRA. Punj — Red juwari.

11. KALA CHUNNA. — Black gram (cultivated grains).

12. MOT. Punj. — Mut.

13. Suffaid Mut.

14. BHUNJLA. Punj — Another kind of red rice.

15. TRU. Punj. *Cuc. Colocynth.* — Grows in the jungle around Buháwulpúr, Ahmudpúr, &c. and at Mithunkot abundantly. Plant creeping; flower yellow; fruit round; blossoms in Sáwun (August). Used generally as a purgative.

16. KEWURI. Punj. — Used as food in time of famine. Seems of a very inferior description.

17. KULUNGA. Punj. — A kind of rice.

18. SUTTRA. Punj. — Another variety of rice.

19. POGPULHARI. Punj. — A grass eaten by camels: grows in the jungle.

20. PUTRAHUL. Punj. — A sort of grass cut for horses.

21. THUN. Punj. — Garlic.

22 RAOWA. Punj. — *Amaranthus polygamus.* Cultivated and used as a vegetable.

23. HURNOL. Punj. *Palma Christi.* — Castor oil seed. Cultivated extensively. Used externally us an application for rheumatism, leaf made hot applied for same purpose; oil extracted after external husk has been removed.

24. BUKAYAN. H. — *Melia sempervirens.* A species of Nim; a wash made with the leaf is used to kill lice in the heads of children. The timber is said to be useful.

25. ISUF GUL. P. *Psyllium?* — Grown in gardens and used as cooling medicine and in preparing a shurbut.

26. NIDAMUNI. Punj. *Amygdalus Communis.* — The almond; plentiful at Dajul. A few trees are to be found down at Mithunkot.

27. OHAR. S. — Mustard: cultivated.

28. MUNG. *Phaseolus mango* : -- Cultivated.

29. KALLA DHATURA. *D. fastuosa.* — Cultivated seeds used as purgative; said not to have any intoxicating quality.

30. HALO. Punj. — Cultivated. Used as vegetable and as cooling medicine.

31. MA. Punj. *Phaseolus maximus.* Mash. H. — A vetch: cultivated.

32. SILAN. Punj. — A vegetable.

33. POHAR Punj. — Nothing known of these but the name.

34. WULL Punj. — do. do. do.

*Catalogue of Garden seeds collected at Multan (and contained in Baskets, Nos.* vii *and* viii.)

1. NAFIRMAN. P. —Sown in Káthee (November); flowers in Phagun (March): no smell.

2. GUL-I-LALA. P. — Tulip sown in November; flowers in April.

3. TUKMAH. S. UMBER. Punj. PADSHA PUSAND. P.— Sown as above; blue flower.

4. GUL-I-SHUMRO. P. — Sweet scented; colour brown.

5. Do. do Of a red colour.

6. Do. do White (*Polyanthes tuberosa ?*)

7. Do. do. Golden yellow.

8. ASHRAFI. P.

9. GULI SUDBERG. P. *Rosa glandulifera.* Roxb. — Sown in Jeth, Asad, (June, July); flowers in Kathee, (Nov.)

10. MUKHMALI KULINGA. Probably *Gomphrena globosa.* — Velvety Kulinga; red colour; large round flower; sown in June; flowers in November: remains in flower three months; no smell.

11. TUKHMA. S. — Red flower; sown in Asad (Oct.) flowers in November.

12. CHUKA. P. *Oxalis?* — Used when green as a vegetable; said to have a sour taste; sown in Nov. flowers in April.

13. GUL-I-KHAIRU. P. — Holly hock.

14. GUL-I-AJAB. *Hibiscus Mutabilis.* — Sown, in Phagun (March); flowers in November, or should it fail then in the following March.

15 GUL-I-SHUMA. — Sown in March; flowers June -- October.

16. TALI. S. *Dalbergia Sisoo.* Roxb. — Large legume bearing tree; flowers in April; seeds scarcely ripe yet (19 June) Sown in Sawun (August) becomes a large tree in 12 years if freely supplied with water; timber exellent; specimen sent.

17. KACHNAR. *Bauhinia variegata.* — Sown in August: a large and handsome tree; leaves doubly heart shaped. (See drawing) timber not useful Seeds used as a vegetable and pickled.

18. SUHANJILY. — Also a large garden tree; seed used as above. Sown in Phagun, flowers in three years and attains a good height. It is probably different from the Hyperanthera moringa, though the native names (subhanjana and suhanjila) are nearly alike.

Basket No. ix. miscellaneous garden and wild seeds, many of them duplicates, collected in Buháwul Khán's country, and between Mithunkot and Dera Gházi Khán.

*Catalogue of specimens of Timber in common use along the line of the Indus.*

1. Ber. *Zizyphus jujube.* — General carpentry and building. At Ghora Bari for ship building. Tree said to attain a height of forty to sixty háth, and a girth equal to the span of three men. Best trees I saw were at Ludwana (on road from Hydrabad to Khyrpúr) but none of them reached this magnitude.

2. Timmer. —Used in building for ships knees found at Ghora Barí. Size not well known.

3. Vellaiti Kikur. — Variety of Babool (Acacia) found abundantly near Chachur. I am told it reaches 60 háths in height and 2 yards in girth, but I never saw this.

4. Karor. — Ghora Barí. Used for house building, rafters; seldom attains a greater scantling than specimen sent.

5. Kye. — Tamarisk every where through Sindh. Attains a height of 12 háths (18 feet) and squares to 18 inches. Used for house building, ship building and firewood.

6. Kuril. — The caper tree or rather bush; sometimes so gross as to square to 12 inches or even upwards; used for building, also turned into wooden mortars for pounding bang in.

7. Tali. *Dalbergia Sisu.* Roxb. — The most useful timber in Sindh; grows to 40 háths high and 2 men's span in girth. Used for shipbuilding, houses, furniture, stamps for printing cotton, and I have no doubt, would answer for common wood engravings.

## 2.

*General Remarks on the remedial effects of the extract of Ganja as observed at the Native General Hospital at Bombay; forwarded with two cases of Tetanus, treated in that Institution.* By A. Graham, Esq.

Although one of the two accompanying cases terminated fatally, yet the good effects of the remedy were so manifest throughout the patient's illness, after his admission into hospital, in the mitigation by him experienced of his extreme sufferings, that I am happy in being able to say, that in severe cases of the disease, and under circumstances similar to the present, where a cure is not to be effected, from the patient not applying early, that yet, as in the case before us, the transit to the grave may be greatly smoothed, by the disease being in some degree stript of its most formidable characteristics; and I am of opinon, that had this man applied earlier, and before he became so much worn, and exhausted, that a still more happy result would have followed the use of the extract of Ganja in his case. Its effects on the vascular system in calming, reducing, and then sustaining uniformity in the circulation have been obvious, and this quality, as manifested in the successful case, deserves particular attention. The remedy would seem to possess properties of a sedative, anodyne, and anti-spasmodic nature combined.

The remedy has likewise been used in small doses in rheumatism, in its

various forms, in combination, and would seem to add to the good effects of the other medicines; particularly in cases, where the patients have been addicted to the previous use of intoxicating liquors, or stupifying drugs, and in febrile cases, where the circulation was much disturbed, and where high nervous excitement existed. — Combined with diaphoretic medicines, it seemed to assist in cutting short the disease. — It does not confine the bowels, and I incline to think that it rather disposes them to be moved than otherwise.

Case 1st. — *Lacerated Wound.* — Dugreah, boy, admitted 15th February 1841; aged about 13 years. Whilst in the act of getting off a cart yesterday, the Bullocks took fright dragged on the cart, and his right leg, came in contact with the outer edge of one of the revolving wheels, which lacerated the integuments, and superficial muscles, to a very great extent, from below the knee anteriorly, and along the outer leg, to near the instep; wound, is very painful; feels chilly. ℞ Mist. Camph. ℥i. Spt. Æther. Nitros. m. xx. Vin. Ipecacuanh. m. xxx. Tinct. Mur. Morph. m. xx. m. bis n. s. ℞ Hyd. c. Creta gr. v. Pulv. Ipecac. Comp. gr. v. in pil. nocte s. Diet, congee and milk.

16th. — Surface warm; some swelling in the leg, and much pain; tongue white, moist. ℞ Mist. Camph ℥i. Spt. Æther. Nitros. m. xxv. Vin. Ipecac. m. xxx. Sol. Ant. Tart. ℥ii. m. ter in die s. ℞ Hyd. c. Creta gr. iii. Pulv. Ipecac. Comp. gr. v. in pil. bis die s. Lot. Frigid. ad. p. d. 6. p. m. *Vesp.* Capt. Solut. Ant. Tart. ℥ii. Spt. Æther Nitros. m. xx. Soda Tartarizat. ℥ii. m. s. s. 10 p. m. ℞ Sol. Ant. Tart. ℥i. Spt. Æther. Nitros. m. xx. m. ter nocte s.

17th. -- Had violent fever last evening, and great increase of pain in the wounded leg. These symptoms are greatly lessened since, but the knee joint is swollen, hot, tender and painful. Bowels not moved. Hirud. xxiv. ad. genu. dolent. Lot. frigid post. ℞ Calomel gr. v. Pulv. Jalap Comp. ℥i. Aquæ Puræ ℥i. m. stat. s. *Vesp.* Capt. Statim. Sol. Ant. Tart. ℥ii. et omni 3tia. hora. Repet. ℞ Hyd. c. Creta. Pulv. Ipecac. Comp. āā gr. v. nocte s.

18th. — As at last report. Hirud. xxxvi. ad p. d. Genu. ℞ Sol. Ant. Tart. ℥i. Vin. Ipecac. m. xx. Spt. Æther nitros. m. xx. m. ter in die s. Catapl. ad ulcer.

19th. — Had a violent fit of fever last evening, with increased pain in the wounded limb, all of which have since been relieved. Skin nearly of natural temperature; bowels open; pulse quick., The bruised integument along the wound has begun to slough. ℞ Hyd. c. Creta. gr. v. Pulv. Ipecac. Comp. gr. vi. in pil. bis die s. Cont. med. Diaphoret. ter indie. Cont. Catapl. *Vesper.* ℞ Mist. Camph. ℥i. Vin Ipecac. m xxx. Spt. Æther. nitros. m. xv. Tinct. M. Morph. m. x. m bis nocte s.

21st. — Wound less painful, sloughing process going on. Has evening fever; bowels regular; appetite good. ℞ Quininæ Sulphas. gr. iii Decoct. Cinchon. ℥ii. Acid. Sulph. Aromat. m. v. T. M. Morph. m. xx. ft. ter die s. (at 7, 11, and 2 o'clock.)

22nd. — Feverish this morning, makes no complaint; bowels free. ℞ Liq. Acet. Ammon. ℥iv. Mist. Camph. ℥i. Spt. Æther. Nitros. m. xx. Tinct. M. Morph. m. x. Vin. Ant. Tart. ℥ss. m. ter in die s.

23rd. — Free from fever this morning; pulse quick; bowels regular; ulcer suppurating, and granulations rising; complains very little. ℞ Mist. Camph. ℥ii. Qninin Sulph. gr. i. Spt. Æther. Nitros. m. x. m. ter die sumend.

24th. — Lot. S. Cupri ad ulcer. Cont. med. ter die. ℞ Hyd. c. Creta gr. v. Pulv. Ipecac. Comp. gr. vi. Ext. Hyosc. gr. ij. in Pil. h. s. s. *Vesp.* Omit. pil. gargar, pro ore.

25th. — Gums tender; sore granular; surface very extensive; general irritation diminished; bowels regular. Cont. med. Tonica bis in die s. *Vesp.* Complains of some stiffness in the jaws with a little pain, and some inability to swallow; does not now complain of his gums, or teeth; bowels free; ulcer very extensive, but clean and healthy looking. Fotus p. d. ℞ Pulv. Ipecac. Comp. gr. x. Ext. Hyoscyami gr. iij. in pil. h. s. s.

26th. — As last evening. Linim. Stimulans. Infric. p. d. — ℞ Pulv. Ipecac. Comp. gr. x. Pulv. Ipecac. gr. i. in pil ii. bis die sumend. *Vesp.* Infric. ungt. Hyd. Comp. ʒi. Opii. gr. v. Femor.

27th. — Stiffness of jaws continues, and has rather increased; has an altered expression of face; bowels open; pulse 80, soft. ℞. Pulv. Ipecac. Comp. gr. vi. Pulv. Ipecac. gr. i. Ext. Hyoscyami gr. iii. in Pil. bis die sumend. Cont. Infric, &c.

28th. — Stiffness of jaws continues, and is gradually increasing; forehead corrugated, and expressive of anxiety; bowels twice moved yesterday; pulse the same; ulcer not troublesome, and healing; skin cool, and soft; pulse 80, when quiet, 120 on exertion. ℞ Calomel gr. iii. Pulv. Ipecac. gr. ii. Pulv. Jacobi gr. ii. Ext. Opii. gr. i. in pil. bis die s. Cont. Infri. Lint. Hydr. u. a.

*March* 1st, 7 A. M. — Spasm of jaws continues, and is increasing gradually; has now considerable rigidity of the muscles of the neck, with some pain at the nape; pulse continues at 80, when quiet, but on getting from the horizontal to a sitting posture is accelerated to 120; skin soft, and cool; ulcer causes him no trouble; bowels open; voids his urine frequently, and freely. ℞ Ext. of Hemp gr. i. omni 2da. hora, s.

2nd. — Took 12 grains of the Hemp extract during yesterday, and last night, without expressing himself benefitted or relieved; the symptoms do not seem to have increased any since last night. Continue medicine.

3rd. — Took 27 grains of extract since yesterday; has been under its narcotic influence in a high degree; twitchings come on in the back, and produce great suffering; distortion of countenance continues; bowels moved once in twenty-four hours; passes urine seldom, and but scantily; pulse has been at about 90 since last report.

4th. — Has taken 26 grains of extract since yerterday; symptoms as then detailed; slept badly at night, but had intervals of repose during the day; pulse 90; skin warm, and clammy. Continue medicine.

5th. — Slept a good deal yesterday at different times, but passed a sleepless night; complains of giddiness and stupor; twitchings less frequent, or severe; — jaws rigid, and protrudes the tongue with difficulty, and then only partially; tongue moist, white; pulse the same; ulcer healthy; 30 grains of extract given since last report. Continue the medicine in 3 grain doses every hour. Food.

6th. — Has taken 24 grains of the Hemp since last report; spasms more severe this morning, and severe opisthotonos present; bowels not moved; takes conjee; pulse 70; aleep; calm; skin clammy, cool. Continue medicine. Soup.

7th. — Has taken 39 grains of the extract since last report, the rigidity returns with severity when the effects of the medicine seem to wear off a little with convulsive twitchings of the back, and nape; corrugation of forehead, and

distortion of face less ; has much desire for food ; protrudes his tongue more, and with freedom, which is white, and rather dry ; bowels not moved ; voids urine seldom; skin cool, and clammy ; pulse calm, soft, and about 80. Continue medicine. Enema Purgant Tereb. Soup.

8th. — Has taken 35 grains of the extract since last report ; great stiffness of the jaws and muscles of the back and neck ; bowels not moved. Continue medicine.

9th. — 20 grains of the extract of Hemp taken since last report ; rigidity of muscles generally continues very great, and twitchings also continue but are lighter ; bowels once moved by a Turpentine enema; protrudes the tongue considerably, but with difficulty ; pulse 80 ; appetite good ; slept last night. Continue medicine.

10th. — Took 39 grains of the medicine since last report ; expresses that he feels himself better this, than any morning as yet ; opisthotonos, and twitchings much better ; bowels open ; appetite good ; jaws stiff; muscles of abdomen still tense, but rather less so then before ; pulse the same. Continue medicine u. a. (grain vi. stat.)

11th. — Has taken in all 51 grains of the medicine since last report, and is under its narcotic influence in a high degree ; twitchings not so frequent ; protrudes his tongue more ; expression of countenance more natural whilst asleep ; soon relapses into his stupid sleepy state when left alone, after being roused ; abdomen less rigid ; no medicine. Full diet.

12th. — Took none of the extract all yesterday, but the symptoms returning with their former severity, recourse was again had to the medicine, and 15 grains were given during last night ; slept little ; has two or three spasmodic twitchings in an hour ; bowels not moved ; is now drowsy. Continue extract grains iii.

13th. — 32 grains of the extract given yesterday; continues in much the same condition ; bowels once freely moved without an enema ; pulse about 70 at all times. Continue medicine.

14th. —Took 24 grains of the medicine since last report ; passed an easy day, but had a restless night ; bowels opened once ; pulse the same ; complains of pain in the nape of neck this morning ; ulcer healing ; countenance more anxious. Continue medicine.

15th —39 grains of extract taken since yesterday ; bowels opened once since Is in all respects in nearly the same state. Continue medicine.

16th. — 21 grains of the medicine given since last report ; symptoms continue the same ; but complains of his nape more this morning ; the muscles here are stiff and tender on pressure ; bowels opened daily naturally. Continue medicine. Fotus ad nape.

17th. — 42 grains of extract given since yesterday ; muscles of the neck stiff; opens his mouth more, and feels generally better; bowels natural. Continue medicine.

18th. — 42 grains of the extract taken since yesterday ; goes on improving ; bowels act naturally ; pulse regular ; appetite good. Continue medicine Fomentations and warm liniment to be rubbed into nape and back.

19th. — 42 grains of extract taken since last report ; symptoms gradually yielding ; muscles of nape still stiff and tender ; appetite great ; bowels act naturally. Continue medicine.

20th. — 36 grains of extract given since last report; goes on improving steadily. Continue medicine.

21st. — As last report: the same quantity of extract given since yesterday. Continue medicine.

22nd. — 3 grains of the extract only given since last report; does not seem to feel the omission of the medicine, and continues expressing himself better; complains only of stiffness, and soreness in his neck, on standing erect (which now he can do) the abdominal muscles become rigid: has a voracious appetite for food; bowels open; liniment and fotus to nape, &c.

23rd. — Took last night 6 grains of the extract, he did not complain more than usual yesterday; but the muscles appeared a little more rigid when standing erect; ulcer discharging freely, and healing; surface granular, and still extensive; bowels regular. Lot. Zinci. Sulph. (gr. vi. ad ʒi. Spt. Lav.) *Vesper.* Rept. med. gr. vi. h. s.

24th. — As last report. 25th — Had none of the extract yesterday, and did not seem to miss it; slept well; bowels natural. 26th. — As yesterday. R. Decoct. Cichon. ʒii. ter in die sumend. 27th. — Ulcer healing slowly; surface healthy, and granular; edges indolent rather. Continue medicine. 29th — Doing well. Continue medicine. 31st. — Doing well. Continue medicine. *April* 1st. — Ulcer healing. Continue medicine. 5th — Idem. 10th. — Idem. 16th. — Convalescent. Omit Cinchonæ. Contin. Lot. Zinci. Sulph. c. Spt. Lavand. ad. ulcer. 21st. — Free from complaint. Discharged.

Case 2nd *Tetanus Traumatica.* — *March* 2nd. — Ramah Soortee, a thin spare man, admitted labouring under violent Tetanic spasms of the whole body, neck, and limbs, with great rigidity, and stiffness of every part, but, of the left leg and foot in particular, which are greatly curved, and the toes drawn downwards; jaws firmly closed, so that scarcely can the edge of a thin iron spoon be introduced between them; pulse 150; surface clammy; and the neck, and shoulders, bedewed with clammy moisture; has aggravation of the spasms on attempting to swallow liquids, which alone he can take, but, with much difficulty and suffering on the occasions. — These symptoms first appeared three days ago, and originated in a puncture on the sole of the left foot, from a nail, nine days ago; bowels not moved, and no urine voided the last two days; during which period he has taken no food; sleeps none; and has twitchings at short intervals producing opisthotonos; great thirst; countenance distorted. R. Extract Hemp gr. v. Spirit. Rectific. ʒi. m stat. Repeat the Ext. Hemp. gr. iii. every second hour. Enema Terebinthinæ.

3rd. — 6 A. M. Has taken since 3 P. M yesterday, 21 grains of the extract; can open his mouth a little now, and has obtained snatches of repose, and ease; symptoms though a little mitigated, are all still present; pulse 120. Continue medicine.

4th. — Has taken since 6 A. M. yesterday, 47 grains of the extract with some further benefit; can now protrude his tongue with ease; and there is less general spasm, or rigidity; can take conjee; pulse 120; tongue excited; has slept a good deal at intervals; bowels moved by a terebenthinæ enema, and has voided urine; complains of great thirst. Continue medicine.

5th. — Has taken since yesterday morning 23 grains of extract of Hemp; complained all day of giddiness, and could not keep his eyes open; had more frequent twitchings, which were very severe; perspired about neck, face, and

chest, profusely ; toes of the right feet curved and drawn downwards ; those of the left feet drawn upwards on the dorsum of the foot ; bowels moved last night ; pulse has since yesterday's report been about 124, firm ; feels appetite, and takes food ; cannot this morning open his jaws widely, or with the ease of the last two days ; on the least exertion, the muscular twitchings annoy him ; countenance anxious ; skin warm, and clammy.

6th. — P. M. Has up to this hour taken 46 grains of the medicine, which induces lethargy, (from which he is however easily roused) and relaxation of the spasms in a great degree, with diminution of the frequency, and severity of the convulsive twitchings, which begin in the left foot, and extend upwards, along the back ; can again protrude his tongue with great freedom ; has no inclination to take food, and cannot be easily induced to do so, seemingly from inability to swallow easily ; pulse smaller, 120 ; skin clammy ; bowels have been moved, and has voided urine ; looks very much exhausted, and emaciated ; breathing short, and hurried.

10th. — P. M. No change took place up to this hour when he died : Had not taken any more of the medicine, and refused soups, or conjee.

## 3.

*Extract from the Annual Report of the sick in Hospital of the 10th Regiment, N. I. Stationed at Aden, for* 1840. By C. Black, Esq.

Presented by the Medical Board, April, 1841.

General Observations — The prevailing diseases in the 10th Regiment. N. I. during the year 1840, have been scorbutus, fever, rheumatism, and ulcers, Of these, the cases of scorbutus, and the ulcers have been by far the most obstinate and difficult to treat. Since the period of my receiving medical charge of the Regiment, eleven men have died from different causes, but in each, with the exception of Quire, the Quarter Master Serjeant, the disease was more or less complicated with scurvy. Previous to my arrival at Aden, the deaths amounted to 41 and by the last accounts from Bombay, 33 of those sent away sick, are reported to have died, either during the voyage or after their arrival at the Presidency, making in all, 85. From the reports already forwarded, it will be seen that the admissions were most numerous during the hot weather, and gradually began to diminish as the cold season advanced, when the roads being open, fresh vegetables were procurable in the bazar. More cases of scurvy having been admitted, than of any other disease, and that likewise having proved the most fatal in the 10th Regiment, though it is not named as one of the diseases, on which the medical officer is expected to report. I shall first give a sketch of the chief symptoms presented by it, and of the manner in which they were treated.

*Scorbutus.* — The patients affected with scurvy, first began to complain of tenderness of the gums, with loss of appetite and debility, but did not generally apply for admission to hospital, before sloughing had commenced with ulceration and oozing of blood ; in many cases the gums became so much swollen, as to

cover the teeth, and completely prevent the possibility of chewing. The cheeks likewise become swollen: as the disease advanced the patients began to complain of pains in the extremities; especially stretching, along the shin bones, with swelling of the ankles, and stiffness, of most of the larger joints. Large dark colored blotches appeared on different parts of the body, and occasionally vesications, which on being ruptured were seen to contain a fœtid fluid, having the appearance of decayed blood, and the skin underneath was found to have mortified. On the removal of the slough a deep cavity was left, the edges of which soon became hard and elevated, with the surrounding margin of a livid color, very tender on pressure. The sores thus formed were attended by so much pain as totally to prevent sleep, and the gentlest touch on the surface of them, was followed by an oozing of blood. In the scorbutic cases, the sligtest bruise, was followed by sloughing and ulceration, and this sometimes spread with so much rapidity, as soon to endanger the life of the patient. The large ulcers were accompanied by more or less of constitutional irritation, such as frequent rigors, and profuse sweats. Death was usually preceded by œdema of the lower extremities, and in some cases the whole body became anasarcous. The termination was generally very sudden. The patient in the morning presenting no unusual symptom, would in the course of the day be seized with great difficulty of breathing, the pulse at the wrist become almost imperceptible, and the extremities cold. In five, or six hours life became extinct. In the few cases in which an examination of the body could be obtained, nothing was discovered to account for the symptoms, but a slight effusion into the pleura and pericardium, with congestion of the lungs posteriorly.

Notwithstanding the constant use of lime juice, sugar, beer, and arrack, with different tonic medicines, no favourable change was observed in the scorbutic cases, until about the end of October, when the bazar began to be supplied with fresh succulent vegetables from the interior, which were liberally dispensed in hospital; then a decided improvement was observed, and by the middle of December, the disease had almost entirely disappeared. Charcoal poultices were applied to the ulcers till the separation of the slough, when the sores, after being washed with solution of chloride of lime, were dressed with resinous ointment, or lint dipped in turpentine, and when the granulations assumed a healthy appearance, they were touched daily round the edges with sulphas cupri, or nitras argenti. During the day to allay pain, large doses of opium, combined with camphor were repeatedly administered, and strong narcotic draughts was given at night to induce sleep.

This treatment has been persevered in since the period of my receiving charge, and though very tedious, it has proved eminently successful, most of the ulcer cases admitted having been dismissed cured, and those at present remaining in hospital presenting a healthy appearance.

*Fever.* — The remittent form of fever has been the most prevalent at Aden, but the cases of it have been of a very mild description, presenting no unusual symptom, and seldom requiring to be kept in hospital more than 10 or 12 days, The treatment was similar to that usually adopted in India.

*Rheumatism.* — The most common form admitted into hospital, has been of a sub-acute character, presenting little or no appearance of inflammation, pulse generally small and weak; skin cool: the treatment that appeared to benefit

them most consisted of mild diaphoretics, accompanied by stimulating frictions, and the occasional application of a blister, attending at the same time to the state of the bowels. Tonics such as gentian combined with quinine, were given to complete the cure.

## 4.

*Extract from the Second half yearly Report of the Oculists Department for* 1840. By M. Stovell, Esq.

Presented by the Medical Board, February, 1841.

*Purulent opthalmia.* — During a part of the monsoon purulent and catarrhal opthalmia prevailed to a considerable extent, but generally in a mild form; a few cases however of a very severe purulent opthalmia presented themselves and afforded me more opportunities of appreciating the very beneficial result of Mr. Tyrrell's method of treatment which I detailed in my first half yearly report.

The Board will perhaps allow me to allude to one case in particular, both because it afforded under peculiar circumstances satisfactory evidence of the success of his mode of treatment, and because it occurred in a patient of Surgeon Montgomery of the 1st Battalion of Artillery, who was I believe fully convinced of the claims to attention which the treatment alluded to demands.

On August 12th, Corporal Jennings of the 1st Battalion of Artillery, was admitted with purulent opthalmia in both eyes in a mild form; the usual routine of treatment was adopted but without any improvement, and on the 14th he was attacked with delirium tremens which increased in violence, rapidly; the purulent inflammation in his right eye also assumed a violent character and increased in intensity till the 16th, at which time the upper lid was enormously swollen and of a florid color, there was considerable deposit in the cellular tissue beneath the conjunctiva producing chemosis to such an extent that it considerably overlapped the margin of the cornea, the purulent discharge was abundant and yellowish, and the cornea had partly lost its brilliancy, and to a small extent was hazy, it was evidently beginning to lose its vitality from the arrest of its arterial supply. The delirium tremens continued severe. Doctor Montgomery and I atended him together:—his constitutional state would not admit of depletion and the cornea of his right eye was just in that state in which it would certainly have sloughed out in a few hours, had nothing been done to arrest the progress of the disease, and to restore the circulation in the conjunctival vessels supplying the cornea which had been arrested by the deposit in the cellular tissue beneath the conjunctiva, where it is so firmly bound down over the junction of the cornea and sclerotic. It was an excellent case for testing the efficacy of Mr. Tyrrell's treatment, I therefore with the view, on his principle, of restoring the circulation in the vessels alluded to made eight deep incisions with an extraction knife through the chemosed conjunctiva, commencing at the margin of the cornea and carrying the knife backwards between the attachments of the recti muscles, between each of which I made two incisions. The result was very satisfactory; in the evening of the same day the haziness of the cornea had nearly disappeared, and on the following day, the 17th, the eye was

considerably less inflamed; the chemosis was much reduced in extent and the discharge much diminished. From this time the eye rapidly improved. On the 21st there was neither chemosis nor discharge; and by the 24th, so rapid had been the change to healthy action that the eye was perfectly free from inflammation. I consider the result of this case as a strong proof of the correctness of the pathological views on which Mr. Tyrrell founded his treatment, and I believe that the eye would certainly have been lost, had his treatment not been adopted.

The same treatment was resorted to with success in the case of Havildar Sewdeal Sing of the Golundauze Battalion, another patient of Surgeon Montgomery, but as there was no peculiarity in this case, I will not trouble the Board by enlarging on it.

5.

*Case of Hydrophobia.*

Presented by the Medical Board.

On Sunday the 8th of August, 1841, at half past 10 o'clock A. M. I was informed by Lieutenant ———, that ———, (then out with a hog-hunting party at Serulgaon, about sixteen miles from Ahmednuggur) had evinced symptoms of Hydrophobia the evening before, and no time was lost in dispatching Assistant Surgeon ———, with a palankeen to his aid.

On his arrival at Serulgaon, Mr. ———, found the patient labouring under great mental depression, intense thirst, prostration of strenght, and occasional intense nervous excitement; surface cool; pluse full and frequent; great anxiety and restlessness, with freqent recurrence of violent spasms in the muscles of the throat preventing deglutition, and brought on by exposure to cool air, the sight of fluids, or the sudden approach of any person towards him. After considerable delay and difficulty, twenty-four onnces of blood were abstracted from the arm, and about our drachm of Tinct. Opii was swallowed, having been previously dropped on dry toast, and after most excruciating suffering from spasms, caused by placing him in the palankeen, he reached Nuggur at half past eleven o'clock on Sunday night.

On his arrival, I found him perspiring profusely from every pore (the surface being only naturally warm) pulse 98, soft and regular; and he was perfectly free from all spasmodic action, but, an attempt to remove him from the palankeen, in which he dreaded suffocation from the heat, brought on an immediate return of his sufferings and it was utterly impossible to relieve him without causing an intense aggravation of the spasms.

At 2 A. M. succeeded in getting the occiput shaved, and half an ounce of the liquor lyttæ well rubbed in over that part, the back of the neck, and fauces; he was also able to chew and I believe, to swallow, twenty grains of calomel and five grains Ext. Opii mixed up with crumb of bread. He seemed tranquil for one hour after the exhibition of this medicine, and then expressed a strong desire for tea which I had prepared immediately and with the hope of enabling him to swallow it, gave him a silver tube to suck the fluid through. Having

previously blindfolded him at his own request, he continned to converse with me for nearly two minutes, inhaling the air through the pipe all the time, when, without the possibility of his seeing the fluid, or having any intimation of its proximity, it was cautiously brought towards him, with the intention of immersing the lower end of the tube in it; but when the cup containing the tea approached within a yard of him he uttered a terrific shriek, and fell back on his bed, in one of the most awful paroxysms of spasm I ever witnessed. A repetition of the attempt to bring any fluid near him, produced a similar result, and deeming it cruel to cause a renewal of such agony, all further trial was abandoned.

From this period until 6 A. M. he remained comparatively tranquil, but, at a quarter past six he was seized with a return of the spasms in his throat in an aggravated degree, and his sufferings were dreadful. To add to his unhappy state, any attempt to approach or aid him, seemed to increase his agony, and with very short intermissions, he remained in the state described until 8 o'clock, when he appeared completely exhausted. During an interval of apparent ease, a pint of highly concentrated sheep's head broth with an ounce of Landanum mixed was thrown up the rectum at 9 A. M. and retained, but afforded no relief: the spasms (now extended to the stomach) returned with tenfold violence, hands and feet became deadly cold, the whole body was covered with a profuse clammy sweat, and pulsation could no longer be felt at either the wrists or temples, and after tossing about in excruciating torture for an hour, with three intervals of ease, only, of a few seconds duration each, he expired at 10 o'clock.

During the entire period of my attendance viz. from half past 11 P. M. on Sunday till 9 A. M. on Monday, the poor sufferer was perfectly rational, and clearly detailed the history of his case, which is briefly as follows :—About six weeks ago he made an attempt to tame a young jungle dog, but the animal having become excited and bitten a tame dog of his own, Mr ———, wished to muzzle the wild animal and while trying to do so, was bitten in two or three places in his left hand; having used the precaution of soaking the parts in hot water, and pencilling the wounds freely with argent. nitrat, he thought no more of the matter, until the tame dog evinced symptoms of madness, although the wild one shewed no sign of disease. From that hour, a dread of rabies preyed more or less on his mind, and in the hope of getting rid of the unpleasant feelings the occurrence had given rise to, he rode into Nuggur from Aurungabad, a distance of 75 miles in one day, to join a hog hunting party then about to start from this place. For two days after his arrival he felt unwell and listless, but persisting in his intention of joining the sport, he proceeded to Serowlee on Saturday, and the same evening felt the approach of his fatal malady, and communicated his fears to Lieut. ———.

## 6

*Case of extensive Tubercular deposition over the convex surface of the Brain, with softening of the left hemisphere, and slight serous effusion into the lateral Ventricles.* By J. Murray, Esq.

Presented by the Medical Board.

———, aged two and half years, of fair complexion and light hair, is reported to have had rather delicate health from his birth, but never to have

had head symptoms. During dentition he was affected with a variety of cutaneous diseases; he always slept badly at night; and throughout last monsoon at Bombay, he suffered from abdominal derangement with boils, which reduced him very much in flesh and strength: and in this state he arrived at this station (Malcolm Pait) in October, 1840. In the course of the three following months, he recovered with surprising rapidity; and from having been a pale, sickly looking emaciated child, he acquired a clear florid, healthy complexion, became extremely spirited and active, but inclined to spareness of flesh rather than the reverse.

In this state of health he went out for his evening walk at 5 o'clock on the afternoon of January the 7th 1841. When he returned at 6 o'clock, he complained of a little pain of forehead and in a minute or two fell asleep on a chair. He was awoke, but refused his supper, at half past six he complained of pain in his stomach and soon after vomited. Frequent draughts of tepid water were given to him, and during the two following hours he vomited repeatedly and freely, and discharged his dinner undigested, with which were mixed some scarlet substances resembling the husks of berries; but the vomited mattier was not kept.

At 9 o'clock, when I first saw him, he lay in a state of stupor for ten or fifteen minutes at a time, then started up screaming and restless for two or three minutes, and again relapsed into the same lethargic state. There was a cold damp moisture on the face and forehead, with pallor and puffiness of the face and eyelids; the soles of the feet were hot, and the rest of the body of natural temperature — tremors of the hands, frequent grinding of the teeth, and occasional vomiting and thirst. The pulse was 130 rather below than above the natural strength, but there was strong action of the heart, respirations 36 and stertorous; pupils alternately dilated and contracted. After having been asked several times if he had any pain, he pointed to his mouth (tepid bath, large dose of calomel, blister to nape of neck) at midnight the pulse had fallen to 65 and intermitted; respirations had risen to 60; there was a tendency to coldness over the body generally, occasional transient flushing of the face, but still accompanied with coldness and clamminess of the cheeks. Alternate dozing and jactitation, with grinding of the teeth; the swelling of face had quite subsided, and the thirst had ceased. He appeared to be sensible, except for a minute or two after waking when he talked incoherently (small doses of Spt. ammon. aromat.)

Towards morning of the 8th, the pulse gradually rose to 120; the skin regained its natural heat, and the screaming and jactitation diminished. In the course of this and the two following days, the pulse fell gradually again to 70 or 75, and intermitted, but was of natural strength; the respirations reduced to 28 or 30, but free from stertor; he continued in a state of somnolence, with the eyes half shut, and a natural appearance of pupils, but awaking with restlessness and tossing of the head. Countenance more natural; he seemed sensible, but did not answer questions, and never spoke, except to ask for water, the thirst being at times rather urgent. On the 9th the skin having become rather warmer than natural, two leeches were applied to the temple, but with rather unfavourable effect: blister to the head, a grain of calomel every three hours, repeated mercurial and other purgatives, and enemas, and cold applications to the forehead when the temperature admitted of it.

On the 11th, the pulse ceased to intermit, and on the 12th he first answered questions, and from that date till the 16th there was a gradual amendment. His principal symptoms were extreme fretfulness, laying with the head thrown back, and screaming when he was turned in bed, frequent winking of the eyes grinding of the teeth, and picking of the nose. His pulse varied from 120 to 130 and he had a good deal of thirst; up to this time, he had scarcely lost flesh and his bowels were easily regulated (purgatives frequent small doses of carbonate of soda which had always an immediate beneficial effect in soothing him, and allaying thirst, &c.)

From the 16th to the 26th (when in consequence of my indisposition, he was attended for some days by my assistant apothecary and afterwards by Dr. Ranclaud) he suffered at some period of each day, but at irregular hours, from febrile heat of skin, quickness of pulse, extreme restlessness, and thirst, and the bowels for the first time became very much disordered. His mouth was at this time affected by mercury. For these symptoms repeated purgatives, salines and a few small doses of quinine were given.

On the 26th when I saw him again, I found that he had emaciated considerably. He had lost the feverishness, but he was extremely fretful. could not bear to be moved, slept indifferently, lay with the head thrown back, had frequent and rapid winking of the eyes, his countenance was pallid and pinched, and he had little or no appetite. His pulse varied from 120 to 130 and the alvine evacuations were extremely dark and adhesive.

From the 26th to the 5th February, he again improved; his bowels became perfectly regular, and his appetite somewhat increased; but he continued irritable; his pulse rather quicker and smaller than natural; he did not rally in flesh or strength, and he seldom spoke except to ask for drink.

On the morning of the 5th he was observed to be speechless, but moved his arms and head, appeared to be sensible, and swallowed tolerably well. His countenance was not altered. His pulse 120 and weak; respiration 36 easy. Skin of natural temperature, frequent opening and shutting of the eyes, and occasional grinding of the teeth. Blister to nape, mustard sinapisms to feet, enemas, beef tea and ammonia. &c.

On the 6th at 3 P. M. spoke twice and from half past 8 till 1 P. M. he was in a state of coma, with an almost continued succession of convulsive paroxysms, affecting the muscles of the right eye, right side of mouth, throat, and right arm and hand, with a scarcely perceptible pulse, and a loud mucous rattle in inspiration; the features were sharpened, but complexion not livid; the skin retained its natural temperature, and the head was covered with a copious perspiration. During the whole of these four hours and a half he appeared quite moribund. At first he turned round and called out twice or thrice, as if endeavouring to call some one, the convulsions suddenly ceased, and he became quiet and slept occasionally during the afternoon.

7th. Was quiet and sensible and took a good deal of nourishment. On the afternoon and evening of the 8th he had several convulsive twitchings similar to the former ones but slighter and of shorter duration, each subsiding suddenly. About midnight became comatose with slow stertorous breathing. At daylight on the 8th coldness of both feet and of the right arm supervened, and he expired at 5 P. M. without a struggle.

*Inspection* 14 *hours after death.* On removing the dura mater, the whole convex surface of both hemispheres of the brain was studded with opaque yellowish white, homogeneous, unorganized, flattened patches of varied form, but principally circular, and varying from the size of a six-pence to that of a half crown piece. They were about an eighth of an inch in thickness in the centre and became gradually thinner towards the border, and were in general largest in size over the spaces between the convolutions. These (tubercular) deposits were externally of a cheesy consistence, internally they were partially softened, the more fluid portion exactly resembling healthy pus, which was mixed with small portions in a state intermediate between a solid and a fluid. The patches were situated between the arachnoid and pia mater, to the former they adhered very closely, from the latter they were easily separable. When separated from their attachment, they appeared to have very slightly compressed the cerebral substance, no granular deposits could be discovered in any part.

The pia mater was minutely injected but there was no deposition of lymph or serum, and not the slightest opacity or thickening of this or the other membranes. A great portion of the medullary substance of the left hemisphere (not involving the corpus, callosum) was considerably softened. Consistence of the right hemisphere natural. About half an ounce of limpid serum in the left ventricle and about two drachms in the right. No morbid appearance in the base of the brain or in the cerebellum.

The stomach was found healthy. Circumstances prevented the further prosecution of the dissection.

*Remarks.* The sudden accession of vomiting with the discharge of some scarlet substances resembling the husks of berries, followed by stupor, from which the child could be roused to imperfect consciousness, pallor and swelling of the cheeks and eyelids, with coldness and clamminess, first on the face and forehead and subsequently of the body generally, tremors of the hands, apparent uneasiness of the mouth or throat with a slow, weak intermitting pulse, and stertorous breathing; these symptoms occurring without any precursory signs in a child of a clear and florid complexion, but of a spare habit, gave reason to apprehend that he had ate some of the poisonous red berries of the Solanum Giganteum, which grows here in considerable abundance.

The existence of such extensive tubercular deposition on the surface of the brain, as dissection revealed, probably explains the tendency to depression of the vital powers, which marked the commencement and indeed the whole progress of the disease: for even when there was a reaction, it was action without power, as was evidenced by the effect of a small leeching, and still more by the immediate effect of cold lotions in chilling the head when heated.

Whatever opinion may be formed as to the period at which the cerebral softening commenced, there can be little doubt, I think that the tubercular disease was a chronic affection, and was of many months (probably upwards of a year's) duration. Its presence may perhaps account, in some measure, for the general delicacy of constitution, the successive cutaneons affections, &c. with which the child had been affected from birth, though it is difficult to account for the excellent health, which he enjoyed for the two or three months immediately preceding the fatal attack.

What was the proximate cause of this sudden attack? Was it compression of the brain by the tubercles? Had such been the cause, would not the accession have been more gradual? was it not rather the softening of the cerebral substance?

The formation of the tubercular masses seems to have been unaccompanied by any inflammatory action. This appears to be proved, partly by the absence of head symptoms during all the former illness, but principally by the entire absence of any deposition of serum, or lymph in their neighbourhood and of any milkiness, opacity, or other lesion of the arachnoid or pia mater. The minute injection of the latter, without the loss of its transparency, may presumably be dated from the accession of convulsions three days before death.

The large size of the tubercular masses, most of which were in a state of transition from crudity to softness and their free uncombined situation between two healthy membranes (unaffected either by the morbid effusions which usually complicate their formation on the surface of serous membrances or by the complex structure and presence of mucous bronchial secretion which attend their presence in the lungs), afforded an opportunity of observing, without the possibility of mistake, the progress of the softening of the tubercles *from within outwards* a point which has been questioned by some eminent pathologists.

It is worthy of remark that the seat of the convulsions was on the right side. while the cerebral softening was confined to the left hemisphere, though the tubercular deposit extended equally over both hemispheres.

## 7

### *Notes on the Climate, &c. of Dadur.* By J. Deas, Esq.

Presented by the Medical Board, November 1841.

Having arrived at Dadur on the 30th March last, I can only speak of the climate, &c. from that date, up to the present time; the hot season commenced about the 1st of April, the heat gradually increased till the beginning of May, when it became intensely hot, and continued to increase in intensity up to the end of June. From the 15th of May, to the 5th of June, strong hot winds blew all day and all night, this was followed by an almost equally unbearable, close, and suffocating heat, when a slight change took place for a few days: after this the same suffocating heat which prevailed in June, was again experienced until the 30th of July, when a slight fall of rain brought a little relief during the day. In August the heat was equal to what is felt at the height of the hot season in Hindustan, but having the nights considerably more close and oppressive; from the 15th of May, to the 30th of July, no comparison (so far as my experience goes) can be drawn between the heat of Dadur and that of the hottest place in Hindustan. Mr. Elphimstone says in his history of Cabool that "The heat of Scinde is equal to that of Damaum, and increases as we go towards the south, till it is moderated by breezes from the sea, and that Sebee (which is close to Dadur) is the hottest place in Cabool." As Dadur is so much

farther south than Damaum, and still is not for enough to derive benefit from any breezes from the sea. The heat must be (if Mr. Elphinstone's calculation is correct) beyond the imagination of any one who has not felt the miseries of being exposed to it.

From the 15th of May to the end of June, the Thermometer averaged 125 in the shade during the day, and fell only a very few degrees during the night, and it has been nearly as high as this when there was not a breath of air stirring. Exposure from sunrise to sunset (even among the natives of the place) leading to the most fatal consequences Several cases have come under my immediate care, where men in their usual health, have not been exposed for more than ten minutes to this destructive sun when they fell, as if struck down by a fit of apoplexy and remained in this state, until death closed the scene which it generally did in two hours' space of time, notwithstanding immediate medical assistance being afforded to them. The nights were (if possible) more distressing to the feelings, and destructive to health than the days, sleep being entirely prevented during the first and middle part of them by the feverishness and restlessness caused by the great heat, combined with the withering hot wind which usually sprung up as the sun went down and continued to blow frequently with great force,) until about 4 o'clock in the morning, when the exhausted system, had a couple of hours respite from its tortures in sleep, but even this short repose was not to be calculated upon, as the hot winds did not always cease at this hour, but continued to blow until sunrise. This wind generally blew, from the SW. when no hot wind blew the component gasses of the atmosphere (seemed to the feelings) to have undergone a change in their relative proportions, a feeling as if a great part of the oxygen (the supporter of life) had been withdrawn and the proportion of the carbonic acid increased (in fact resembling very much the feeling a person experiences in descending into an old deserted coal mine, in which there is not a free ventilation) thus rendering the act of respiration, both painful difficult, and imperfect.

The baneful influence of such continued want of rest, combined with the extreme heat of both day and night, was soon apparent in the destruction of the tone of the stomach, and in causing an influx of other evils, which in a very short space of time shook the constitution of even the very strongest to its foundation. The Hospital Returns given in reply to question 2d. showing the number of sick per cent during the months of April, May, June, July, and August, do not according to my opinion, afford a true criterion for guidance in considering the suitableness of the climate of Dadur during the hot season as regards troops, as those returns only show the number received into Hospital labouring under severe and acute, diseases, had all the men been (who from general debility, &c. were unable, efficiently to perform their duties) admitted into Sick Quarters, I am under the mark, when I say that the returns would have shown at least 80 per cent. The proportion of deaths have also been fewer in number than might have been expected, still this speaks little or nothing in favour of the climate, because although its effects have not been the cause of the immediate loss of any very great number of men, it has laid the foundation of diseases which it is to be feared, will before long, deprive the state of the services of many of those who have escaped its immediate fatal effects. The men as a body are at this present moment so debiliated and prone to disease from the long and constant exposure to the great heat, &c.

which they have undergone, that were they brought under any of the usual exciting causes of fever, dysentery, &c. my opinion is, that very few would escape.

I cannot give an opinion as to the suitableness of the climate for Troops during the cold season, but I have no hesitation in stating it to be my professional opinion that Dadur can be occupied during the hot season, only at a fearful sacrifice of life and health.

Reply to Query 2d. viz. sick per cent.

| | | |
|---|---|---|
| During the | Month of April.. | 16 |
| Ditto | Ditto of May... | 39 |
| Ditto | Ditto of June... | 31 |
| Ditto | Ditto of July... | 21 |
| Ditto | Ditto of August. | 11 |

Reply to Query 3d. viz. Number of Troops at the Station and number of deaths during the last five months.

| | |
|---|---|
| Strength of the Head Quarters of the 6th Regt. Native Infantry | 643 |
| Ditto Poona Irregular Horse | 185 |
| Ditto Golundauze | 72 |

Number of Deaths.

| | |
|---|---|
| Head Quarters 6th Regiment Native Infantry | 11 |
| Poona Irregular Horse | 8 |
| Golundauze | 1 |

Reply to Query 4th. The season, &c. showing the last and worst for the Troops.

I am unable to reply to this question as regard the cold season, and I have already in answer to Query 1st stated my opinion as regards the climate during the hot months.

Reply to Query 5th viz. The sort of accomodation the Troops have had, &c.

The greater number of the men were in huts and the remainder in tents, the huts being low and thinly covered, afforded very little better protection from the heat than the tents did. I do not think that the men in the latter, suffered more from disease than those in the former. Had the men been properly housed in, sickness would, in my opinion, have prevailed to a somewhat less extent, nevertheless I am of opinion that with the best possible accomodation the hot season at Dadur would always prove destructive to Troops.

Reply to Query 6th, viz. The particular months during which each station is most unhealthy and the causes.

I am unable to answer these questions.

Reply to Query 7th, viz. The unhealthiness generally of particular places.

I am unable to answer this question.

Reply to Query 8th, suggestion as clothing, &c.

The lighter the clothing is during the hot months so much the better.

8

*Obscure Case of Phthisis Pulmonalis.* By J. D. Campbell, Esq.

Michael Riddin, ætat. 20, embarked for Bombay at Gravesend on the 24th October, 1841. He used to be active and cheerful in barracks at Bromptom, but was noticed to become melancholy and silent when he left the channel. He twice took medicine on board ship for slight headache, which yielded to trifling remedies, and said that except being rather weak, that he was quite well. Was admitted into the sick bay on board the "Donna Pascoa" on the 2d February, 1841 at sea, for diarrhœa which he said was not very troublesome, though he had noticed it forabout six weeks. On examination, I found his chest very much contracted; countenance sallow; dark complexion; and a general heat of skin. He had no cough, no headache, night sweats, griping, or tenesmus. The abdomen was not in the least degree tender on pressure, There was no sickness. The only indications of disease being the diarrhœa. great emaciation, heat of the surface, and pulse 104.

He was ordered rice diet, Hyd. Chlorid. ℊr. vi. Rhei. Pulv. gr. x. statim Ol. Ricini, ℥i. post horas quatuor.

4th. — The frequency of the calls to stool was diminished by the medicines, but he continued very weak. Decoct. Cinchonæ ℥iss, ter in die.

6th. — On the 6th I found him decidedly improved, though still very weak and I gave him one pint of porter daily.

9th. — He continued well till the 9th, when he complained of griping. Ol. Rici. ℥ss. statim. which produced a light brown fluid motion, not very copious. I now commenced with, alterative doses of calomel as follows. Hyd. Chlorid. gr. i. Pulv. Ipecac. Comp. gi. x. secundis horis. Sago ad. libitum. He continued to emaciate, and on the 11th felt a little uneasiness in the epigastric region, which however was very trifling and yielded immediately to Pulv. Rhei. gr. xv. Cinnomom comp. x. Creta p. p. gr. v. I ordered him fresh meat and Port wine daily.

On the 14th he felt quite well; the pulse came down to 88; the tongue was clean; skin cool; and purging absent.

On the 15th the purging returned, but as before unattended by any pain, sickness or other morbid, symptom. The emaciation increased, I administered, Quin Disulph. gr. i ter die, and he continued in the same state without material alteration till the 25, when I ordered Ferri Sulphat. gr. xii. Micpanis q. s mft. pilul xii. Sumat 1 ter in die.

On the 28th the purging having increased, I ordered Mist. Cret. Comp. ℥i. quater die.

*March* 2nd. — The uneasy sensation in the epigastrium having returned, I ordered a mustard cataplasm to be applied, which afforded considerable relief.

As the man was emaciating to a degree which appeared unaccountable, there being, as I before noticed, no apparent symptom of Phthisis or other organic disease, I carefully examined him in company of my friend Mr. T. C. Jervis, the surgeon of the ship, and though we were led to believe in the existence of Phthisis, we detected nothing unusual by the stethoscope. * He had no *cough*,

* N. B. The noise on board the ship necessarily precluded a very satisfactory stethoscopic examination.

difficulty of breathing or night sweats ; no spitting and a total absence of pain of any kind. The purging also was not very urgent, and occasionally while under treatment left him entirely for 24 or 40 hours.

8th. — On the 8th of March he became so debilitated as to be unable to move in his cot without assistance and I gave him, vini rubri ad libitum. Pil. Ferri co. bis die, and omitted other treatment.

10. — On the 10th he rallied a little, and I exhibited, Decoct. Cinchonæ ℥i. ter in die : as the purging continued I also continued Mist. Creta. co. C. Opii. 4ter die.

His motions have continued watery and feculent up to the present time.

On the 15th his countenance became very anxious, I omitted the pills of sulphate of Iron and gave him, Mist. Quinœ. Disulph. ter in die and also Mist. Creta c. Opii post sing. sedes liquidas.

The purging having somewhat increased on the 17th, I ordered him, Pulv. Kino. Comp. gr. x.

He now refused all nourishmsnt, and appeared rapidly sinking. For two days he was constantly supported with wine, brandy and ammonia, and at the same time took, Pulv. Kino. Com. gr. xv. bis die : I also injected a pint and a half of gravy twice a day.

The purging increased and was very troublesome during the night, his aspect had now become very anxious ; the pulse 96, full and strong ; skin hot and dry ; tongue clean and moist ; sordes collected on the lips ; no headache or pain of any kind. I administered Cupri Sulphat gr. iii. Mica panis q. s mft. pil. xii. cujus sumat unam ter in die.

21st. — On the morning of the 21st the pulse was 104 ; thready ; lips and tongue glazed.

Injection of four pints warm water night and morning : during the day he wandered a little and had some few convulsive movements of the hands. The wine was continued and the sulphate of copper with equal part of opium. The purging was arrested for a time. He was purged twice in the night and the motions contained a good deal of pus.

22nd. — On the morning of the 22nd he passed two immense clots of blood by stool. His respiration at 11 A. M. was fifty per minute, and after supporting him with the mist. Vini Gallici, Æther and Ammonia. he expired at a quarter to 2 o'clock P. M. at the instant that the anchor was let go in Point de Galle roads. I made an examination of the body one hour and a half after death in the presence of my friend Mr. Jervis, and we discovered the following morbid appearance.

*Necroscopia.* — The external appearance of the body was exsanguineous ; extremely emaciated chest ; very narrow ziphoid cartilage, considerably bent inwards, no ecchymoses.

*Thorax.* — The surface of the lungs was studded with innumerable tuberculous patches. A fistulous excavation was found in the apex of the right lung : both lungs contained enormous quantities of tubercles in a crude state ; throughout the whole of their substance slight adhesions of the pleura were found on the right side, and very old extensive adhesions on the left side.

The heart was unusually small, and there was concentric hypertrophy of the right ventricle ; pericardium natural.

*Liver.* — This organ was also very small, pale and friable. The peritoneum

was adherent in many places, especially over the liver and pylorus. It also contained *numerous tubercles.*

*Spleen.* — Natural; pancreas natural; the stomach was much distended with air.

There was very extensive ulceration throughout the *whole* course of the intestinal canal, but more especially in the ileum and colon. There was also a gangrenous patch in the upper part of the descending colon and one in the rectum. Kidneys and bladder natural.

REMARK. — This case appears to demonstrate the enormous extent of organic disease, which may exist independent of the patient suffering pain. This man never complained at any time, and the diarrhœa may be said to have been the only prominent symptom.

9

*Letter on the treatment of the Aden ulcer from Dr. Pruner, Chief Physician to the Military Hospital and Professor in the Medical College at Cairo, to the Members of the Medical Board in Bombay.*

Frequent reports brought up by travellers from the Red Sea with regard to the difficulties experienced at Aden in the treatment of what the Arabs call the *Yemen ulcer*, have engaged me to submit to your attention the result of considerable experience acquired during my abode on the Arabian coast. The only interest I have in presenting you these few lines, is a sincere hope and wish to be enabled to contribute in however small a degree towards the relief of human suffering; and I feel certain that actuated by this principle, my observations will not fail to receive your kind consideration and indulgence.

Without pretending to furnish here a learned treatise upon the causes, advance and nature of the ulcerous disease affecting the troops at Aden, I will only venture to propose to you the use of the blue vitrol (sulphas cupri) as the, most effective means I could discover for checking the progress of the ulcer, and even for healing it in very advanced stages.

A few words will be sufficient to explain the treatment I have adopted for about seven years, and to show upon what principles its success depends. I believe it very essential to stop the progress of the disease in its commencement and it is then chiefly that my method is successful. Whenever a wound breaks out and shows an unclean pulpy, grey, &c. surface, I cover it with a very thin stratum of fine prowdered sulphate of copper, and upon that lay nothing but dry lint; on the following day I find commonly the wound reduced to the state of an ulcus simplex with the healthiest aspect; if not, I repeat the practice a second time; but the sulphate of copper very seldom fails in the first instance. The whole success depends on employing it in the beginning. I never saw any case if taken in time, dispose itself unfavourably, neither in Arabian soldiers nor even in some English sailors and other Europeans whom I had occasion to to treat at Gedda.

Even when the disease was more advanced, as I saw unfortunately in many cases in the Military Hospitals, I found that a mixed local treatment according to my method was still more satisfactory than other proceedings.

The surfaces of these horrible ulcers in advanced stages, always present a more or less unequal state as f. i. large spots red and covered with fine granulations, while other parts are depressed and of a foul aspect. I treat the former portions according to the common principles of helcology and attack the latter with the sulphate of copper in the before mentioned way, which treatment I may add, left me the satisfaction of knowing that I had relieved many perhaps from a certain death.

I feel it unnessary to extend myself more in explanation of the local treatment. One other observation only I beg leave to offer. The evil being rather of a scorbutic than any other description, I believe that every circumstance bearing upon this class of diseases should be fully considered with regard to the regimen and constitutional treatment. But little interior treatment will be requisite if the evil is duly attacked in its beginning. All mercurial treatment seems to me dangerous; I never saw mercury less supported by patients of any race and kind than on the coasts of the Red Sea; it promotes and produces there quickly the most deplorable scorbutic decomposition in the human frame.

The above few remarks I offer with deference to so distinguished an arm of my profession as the body of Medical Gentlemen composing your Board with the greatest respect for whom I have, &c.

## 10.

### * *Bombay Branch of the Royal Asiatic Society.*

Resolutions passed by the Bombay Branch of the Royal Asiatic Society.

I. That the present Museum room of the Society be appropriated solely for the purpose of a museum.

II. That a fixed proportion out of the subscriptions of members to the Society be appropriated to the Museum, viz 20 Rupees from Resident and 15 Rupees from Non-resident Members.

III. That a subscription for the first outlay be opened immediately.

*Rules adopted for the care of the Museum.*

I. That care of the property in the Museum shall be vested in curators elected from the Members of the Society.

II. That the curators shall be responsible for the adoption from time to time of such measures as may seem to them expedient for the preservation and exhibition of the specimens, submitting such to the Society as may involve expence.

III. That the curators shall, at their option, receive and dispose of donations, and shall dispose such sums as the Society may place at their disposal for the illustration of each class of subjects.

* The Committee have much pleasure in making these resolutions of the Bombay Branch of the Royal Asiatic Society, generally known to members of the Medical and Physical Society, with the view of its leading to effective co-operation in the promotion of so very useful an undertaking.

IV. They shall direct correspondence with the individuals or societies for the furtherance of these objects.

V. The curators shall have the power of appointing their own officers and the subordinate servants of the institution, and shall submit yearly a report of what has been done and the estimated expenses of the establishment for the ensuing year, for the sanction of the society.

*Rules adopted for making the Museum available to the public.*

I. The Museum shall be open for public inspection on Mondays and Thursdays between 10 A. M. and 1 P. M. and 3 P. M. and 6 P. M.

II. No Specimens shall be allowed to be taken out of the cases or handled on these days, and between these hours.

III. The Museum will be available for study on Tuesdays and Fridays of the week at the same times.

IV. Members of the Society will have free access to it at all times when the servants are there.

V. Subscriptions of 5 Rupees a month or 20 Rupees per annum paid in advance, shall give the same free access as to Members of the Society.

VI. The curators shall have power to prohibit the opening of such cases as would derive injury from general inspection, without their sanction.

VII. The curators shall have power to give tickets to such respectable students in any of the public institutions as may desire to study any of the Classes of subjects contained in the Museum.

VIII. That on Saturdays the Museum shall be available for public instruction under the control of the curators who shall have the sole power of deciding to whom and to what extent, this liberty shall be granted, and applications shall be made at least a week before the use of Museum is requested, and must specify the exact time and purposes for which the use of the Museum is solicited.

# QUARTERLY PROCEEDINGS

OF THE

# MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

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COMMITTEE OF MANAGEMENT FOR 1841.

*President.*

J. McADAM, ESQ.

*Members.*

R. H. KENNEDY, M. D. J. McLENNAN, ESQ.
J. GLEN, ESQ. J. F. HEDDLE, ESQ.

*Secretary.*

C. MOREHEAD, M. D.

*Proceedings from 1st October, to 31st December, 1840.*

MEMBERS ELECTED.

*Ordinary.*

W. Arbuckle, Esq., Assistant Surgeon, Bombay Establishment.

J. F. Morier, Esq.; and G. M. S. Seaward, Esq.; Assistant Surgeons, elected in accordance with Regulation 7.

*Communications Presented.*

1. Letters from Sir J. McGrigor, Bart. Director General of the Army Medical Department; the Royal College of Surgeons London; the University College London; E. Barlow, M. D.; J. Hope, M. D.; and the Deputy Inspector General of Hospitals at Madras, acknowledging the receipt of the Society's Transactions.

2. A letter from C. R. O. Bloxham, Esq., forwarding a Dissertation on the Ulcer of Yeman, drawn up by M. M. Chedufay, Physician Inspector of the Armies of Arabia.

This Dissertation was accompanied with coloured drawings of the different stages of the ulcer, which is similar to that, from which the Sepoys at Aden, have suffered.

3. A case of dislocation of the lower jaw caused by the act of vomiting; communicated by W. Mackie, Esq.

4. Surgical cases which occured at Balmeer, by A. Campbell, Esq.

5. Register of the Pluviometer at Bombay, from the year 1837 to 1840, presented by G. Noton, Esq.

*Proceedings from 1st January, to 31st March*, 1841.

MEMBERS ELECTED.

*Ordinary.*

W. A. R. Nicholson, Esq. Assistant Surgeon, Bombay Establishment.

G. Baines, Esq.; T. B. Larkins, Esq.; S. McMorris, Esq.; H. S. Moore, Esq.; G. J. Shaw, Esq.; E. Impey, Esq.; R. Dent, Esq.; Assistant Surgeons, elected in accordance with Regulation 7.

*Communications Presented.*

1. A letter from T. Loinsworth, Esq. Deputy Inspector General of Hospitals, enclosing a donations of Rs. 100, for the furtherance of the objects of the Society.

2. A letter from Mr. Richardson, Bookseller, 23 Cornhill, intimating the parties to whom copies of the 2nd Volume of the Society's Transactions had been presented.

3. A letter from J. Murray, Esq. forwarding a specimen of a species of Sivertia, a bitter tonic which grows in considerable abundance on the Mahableshwur Hills.

4. A letter from the Assistant Inspector of Her Majesty's Hospitals at Mauritius, acknowledging the receipt of the 2nd Volume of the Society's Transactions.

5. A letter from W. B. O'Shaughnessy, M. D., Professor of Chemistry in the Medical College of Calcutta, presenting to the Society a copy of his pamphlet on the preparations of the Indian Hemp or Gunjah.

The Society is also indebted to Dr. O'Shaughnessy for a specimen of the Extract of Hemp.

6. Return of the diseases of the heart and aorta in H. M. 2nd or Queen's Royal Regiment, from January 1st 1834, to 31st December 1838, shewing also the diseases with which they have been associated, or under which, they have been masked: — also, a Return shewing the comparative mortality by diseases of the heart and aorta in the same Regiment, during the above period, by R. H. A. Hunter, Esq. Assistant Surgeon H. M. 2nd or Queen's Royal Regiment.

7. The second half yearly report for 1840 of the Oculists department, by M. Stovell, Esq. presented by the Medical Board.

8. Cases of cardiac and aortic disease, by R. H. A. Hunter, Esq. H. M. 2nd or Queen's Royal Regiment.

9. Case of extensive tubercular deposition over the convex surface of the brain, with softening of the left hemisphere and slight serous effusion into the lateral ventricles, by J. Murray, Esq., presented by the Medical Board.

10. Experiments illustrative of the Physiological effects of Calomel on the Gastro-intestinal mucous membrane of Dogs, by J. Murray, Esq.

*Proceedings from 1st April, to 30th June, 1841.*

MEMBERS ELECTED.

*Ordinary.*

J. D. Campbell, Esq.; T. Lodwick, Esq.; P. Cruickshank, Esq.; G. H. Dickinson, Esq.; R. D. Peele, Esq.; W. H. Pigou, Esq.; T. W. Ward, Esq.; E. Ellis, Esq.; W. Thom, Esq.; R. R. Smith, Esq.; J. Sproule, Esq.; E. I. P. Pridham, Esq.; and W. Bowie, Esq.; Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation No. 7.

*Communications Presented.*

1. A letter from I. Dorward, Esq., Assistant Surgeon, Madras Establishment, requesting that his name may be withdrawn from the list of members.

2d. A letter from A. B. Orlebar, Esq, Secretary to the Museum Committee of the Bombay Branch of the Royal Asiatic Society, forwarding the rules of the Museum established by the Asiatic Society.

3. Remarks on Military Hospitals with suggestions relative to a new method of ventilation, by Captain J. H. Ottley, 26th Regiment, N. I., Assistant Civil Engineer, Khandesh, presented by the Medical Board.

4. A letter from J. D. Campbell, Esq, presenting a series of Anatomico-chirurgical plates for the use of the Society.

5. General remarks on the remedial effects of the extract of Gunjah, as observed at the Native General Hospital at Bombay, with two cases of Tetanus treated in that institution, by A. Graham, Esq.

6. An Original Communication from Dr. Pruner, Chief Physician to the Military Hospital at Cairo, in Egypt, relative to the employment of the Sulphate of Copper in the treatment of the Aden Ulcer, presented by the Medical Board.

7. Three cases of Cardiac disease, by R. H. A. Hunter, Esq., Assistant Surgeon, H. M.'s 2d Queen's Royal.

8. Annual reports of the 1st Troop Horse Brigade, for 1838, 39, and 40, by A. H. Leith, Esq., presented by the Medical Board.

9. Annual report of the 15th Regiment, N. I. for 1840, by A. Graham, Esq. presented by the Medical Board

10. Annual report of the 10th Regiment, N. I. for 1840, by C. Black, Esq. presented by the Medical Board.

11. Annual report of the European Regiment, stationed at Aden, for 1840, by J. P. Malcolmson, Esq., presented by the Medical Board.

12. Report of the diseases which have occurred in the Hon'ble Company's Steam Flotilla on the rivers of Mesopotamia, from the 1st January 1839, to the

31st December 1839, with a short sketch of the climate and topography, by J. Floyd, Esq., presented by the Medical Board.

*Proceedings from 1st July, to 30th September, 1841.*

MEMBERS ELECTED.

*Corresponding.*

Sir G. Ballingall, Professor of Military Surgery, Edinburgh, and Dr. Laidlaw, of Alexandria.

*Ordinary.*

E. J. Wallace, Esq.; G. F. Forbes, Esq.; D. Milligan, Esq.; J. J. Faithful, Esq.; S. M. Pelly, Esq.; G. M. Ogilvie, Esq.; T. Cannan, Esq; T. A. Boyrenson, Esq.; J. M. Lowry, Esq.; W. L. Cameron, Esq., J. E. Batho, Esq.; W. Collum, Esq.; F Manisty, Esq.; H. Hudson, Esq.; G. Allender, Esq.; Assistant Surgeons Bombay Establishment, elected in accordance with Regulation No. 7.

*Communications Presented.*

1. Letter from E. Barlow, M. D., and the Secretary to the Medical Society of Madras, acknowledging the receipt of the 3rd volume of the Society's Transactions.

2. A letter from J. D. Campbell, Esq., acknowledging the receipt of the three volumes, of the Society's Transactions.

3. Observations on Dracunculus as it prevailed in the 22nd Regiment N. I. from April till September, 1841, by D. Grierson, Esq., presented by the Medical Board.

# LIST OF DONATIONS FOR THE LIBRARY.

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BY THE EDITOR.

Madras Quarterly Journal, 2d Vol.

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BY THE ROYAL COLLEGE OF SURGEONS.

Catalogue of the Library of the Royal College of Surgeons, 1st & 2d Vols.

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BY THE AUTHOR.

Memoir on the Fossils of the Eastern portion of the great Basaltic District of India, by J. G. Malcolmson. Esq.

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BY THE MEDICAL BOARD OF BOMBAY.

Practical Essay on some of the principal Surgical diseases of India, by E. H. Brett, Esq., M. R. C. S. L.

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BY THE ASIATIC SOCIETY OF BOMBAY.

Journal of the Bombay Branch Royal Asiatic Society. No. I.

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J. G. Malcolmson, Esq. *Formerly Surgeon Madras Esblishment.*

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Dr. Pruner, *Chief Physician to the Military Hospital and Professor in the Medical College at Cairo.*
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Sir George Ballingall, *Professor of Military Surgery, Edinburgh.*
Dr. Laidlaw, *Alexandria.*

# TRANSACTIONS

OF THE

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

FOR THE YEAR M.DCCC.XLII.

BOMBAY:

PRINTED AT THE AMERICAN MISSION PRESS,

BY THOMAS GRAHAM.

1842.

No V.

# PREFACE.

It has been judged expedient to reprint in the appendix the table of contents of all the published numbers of the Transactions of the Society. This course has been adopted with the view of bringing under the notice of members, the several subjects to which attention has been directed,—in order that the re-discussion of topics, already fully considered, may as much as possible be avoided, and that the investigations of subsequent contributors may be guided into fresh channels of inquiry.

It will not probably be disputed, that to give prominence, at stated intervals, to the past proceedings of Societies, is a measure calculated to serve a useful purpose by tending to bring about a permanent movement in advance, and to lessen that liability, to which persons similarly circumstanced are more or less exposed, of unknowingly repeating the acts of those who have gone before them.

If this remark be generally applicable, it is very specially so, of Societies in India, where changes are so frequent and so complete,—that it must be within the observation of even a very limited experience to have witnessed questions and measures which had been discussed and settled, brought forward again after the lapse of a very few years, and treated as if they had then for the first time attracted notice. Though such drawbacks to steady and progressive improvement, are, perhaps it may be admitted, to a certain extent inseparable from the condition of a fluctuating society, — still it is surely not the course of wisdom to yield to the force of these adverse circumstances

without making some attempt to lessen it, by adopting judicious measures of counteraction, —and of such, perhaps the preservation and publication of Reports and Essays, and the occasional bringing them to recollection, — are not the least important.

While the obligations conferred on the Society, by the liberal support of Government and the unceasing and courteous co-operation of the Medical Board, are here gratefully acknowledged,— a hope is at the same time indulged, that the proceedings of the Society will be found to have been not altogether unfruitful, but to have tended to preserve and to diffuse, through the medium of their Transactions, much important information relating to medical and physical science.

It is indeed very probable, that many of these published reports, —such for example as relate to the countries beyond the Indus and to the operations of the Steam Flotilla on the rivers of Mesopotamia,— will in a few years hence, be valued much more highly than at present, and will thus afford a more complete justification of that estimate of the utility of the Society's labours which has been expressed in the preceding paragraph.

*Bombay; April*, 1843.

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

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AND DEPUTY INSPECTOR GENERAL OF HOSPITALS.

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# CONTENTS.


ART. I. — Report of the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, from the 1st January, to the 31st December 1841, together with an account of the Climate and Medical Topography of the Upper Euphrates. By John C. Floyd, Esq . . . . . 1

— II. — Annual Report of the Native General Hospital at Bombay, for the year, 1841. By A. Graham, Esq . . . . . 19

— III. — Annual Medical Report of H. M. 2d or Queen's Royal Regiment, from the 1st of April, 1841, to the 31st of March, 1842. By R. H. A. Hunter, Esq . . . . . 34

— IV. — Portion of the Annual Report of the 1st Troop Bombay Horse Artillery, embracing the first eleven months of the year 1841. By A. H. Leith, A M . . . . . 56

— V. — Reports of the Medical Statistics of Upper Scinde, drawn up by the Medical Officers serving with the Force under the command of Brigadier England . . . . . 66

— VI. — History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment during the Monsoon of 1841, when quartered in the Colaba barracks, Bombay. By Arthur S. Thomson, M. D., Assistant Surgeon, 14th Dragoons, lately 17th Foot . . . . . 84

— VII. — Annual Report of the 2nd Battalion, Bombay Artillery, stationed at Fort George, for the year 1841. By T. Robson, Esq . . . . . 94

— VIII. — A Letter addressed to the Superintending Surgeon of the Deccan Division, on the use of the Iodide of iron. By D. Grierson, Esq . . . . . 100

— IX. — A letter on the Fever which prevailed at Bankote in the S. Concan in 1841, addressed to the Superintending Surgeon of the Presidency Division. By T. Waller, Esq . . . . . 103

— X. — Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases. By John Peet, Esq . . . . . 106

— XI — Medico-Historical Abstract of the 1st year's service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons, at Kirkee, under the Bombay Presidency. By J. W. Moffat, Esq., Surgeon H. M.'s 14th Light Dragoons . . . . . 122

ART. XII. — Observations on the good and bad effects of Calomel in some of the Diseases of India. By J. Murray, Esq . . . . . 145
—— XIII. — Annual Report of the 25th Regiment, N. I. for the year 1841. By A. Wright, Esq. . . . . 155
—— XIV. — Annual Report of the Civil Surgeon of Ahmedabad for the year 1841. By S. Sproule, Esq . . . . . 159
—— XV. — Contributions to Vegetable Embryology, from observations on the origin and developement of the Embryo in Tropœolum Majus. By Herbert Giraud, M. D. Edin. F. B. S. E. Ext. Mem. Med. Soc. Edin. &c. &c. . . . . 164

APPENDIX.

1. — Extract from a Letter on the Sickness at Kotra in Upper Sinde, addressed to the Superintending Surgeon, from W. T. Babington, Esq. . . . . 175
2. — Table, shewing the comparative Means and Extremes of Rain-fall and Temperature, at Malcolm Peth, Paunchgunnee, Bombay, and Poona, during the Rainy Season of 1842. By J. Murray, Esq. . . . . 176
3. — Annual return of Patients in the Lunatic Asylum, Bombay, from the 1st January to the 31st December 1841. By W. B. Barrington, Esq. . . . . 177
4. — The late Assistant Surgeon John Fraser Heddle. . . . . 178

Quarterly Proceedings of the Medical and Physical Society of Bombay - 179
List of Donations for the Library . . . . . 185
List of Members of the Medical and Physical Society of Bombay . . . . 187
Table of Contents of Numbers I. II. III. IV. and V. of the Transactions of the Medical and Physical Society of Bombay . . . . . 189

# TRANSACTIONS.

1842.

# TRANSACTIONS

OF THE

# MEDICAL AND PHYSICAL SOCIETY

OF

# BOMBAY.

1842.

## Article I.

*Report of the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, from the 1st January, to the 31st December* 1841, *together with an account of the Climate and Medical Topography of the Upper Euphrates.* By John C. Floyd, Esq.

Presented by the Medical Board, June 1842.

In the report affixed to the annual return of the diseases which occurred in this Flotilla for the year 1840, I considered it my duty to lay before the Medical Board, a brief account of the Medical Topography of the southern parts of Mesopotamia, as a means whereby to the better understanding of the diseases of the country, as well as to elucidate, what may become at a future period the scene of more extensive military, as well as naval operations; and with the same views, I shall now describe the northern part of Mesopotamia, through which the upper Euphrates flows, and upon which river the Honorable Company's armed Steamers, Nitocris and Nimrod, have been employed during the past year.

*Observations on the country and the river Euphrates.*—The country to which the following observations refer, extends along the line of the Euphrates from the 33rd to the 37th degree of north latitude, and unlike

the "Delta" to the south, it is for the most part hilly and void of canals, except in the vicinity of Hilla and Bagdad, where these ancient monuments of the industry of the population and flourishing state of the country, still enable its oppressed inhabitants of to day, to draw forth a precarious return of crops from the surrounding barrenness. From Hilla to Birjeck, the most northerly station to which it has as yet been navigated by us, the distance is nearly nine hundred miles. Its course for seven hundred miles or as low as Felugia, is through a pebbly channel, and from the latter to Hilla, it is through the alluvial soil. It preserves the same rapid and serpentine course as it has in the Delta, but is much more rapid above, owing to numerous artificial walls erected in the river for the purposes of irrigation. The average breadth of the river is from three to five hundred yards, having a current in the high season of five knots, and the low two knots, with a depth of water varying from three to ten feet during the latter.

*Geological features of the country.*—The valley through which the Euphrates flows in the districts now under consideration, varies in breadth from two to five miles, except betwixt Hitt and Anna, a distance of eighty miles, where it closes in, and becomes in many places less than half a mile in breadth. This valley is for the most part composed of the alluvial deposits from the river, and the breccia of chalk and flints brought down, by its strong current during the high season. Through these the river cuts its way, annually changing its course from the formation of bars at the bottom of each reach, which in time become high pebbly banks, and direct the river upon the opposite alluvial ones. These in their turn becoming washed away, are deposited on the next pebbly one, which alternate succession continues as low as Hitt, when breccia ceases, and the river winds on through the alluvium, which latter near Felugia, merges into that of the desert.

The hills which bound this valley are from three to seven hundred feet high, in its upper part; and in its lower, they gradually sink into the Mesopotamian and Syrian deserts. They belong chiefly to the Neptunian class, being composed between Bir and Belis, of chalk and gypsum resting upon a tertiary sandstone; at the latter place ocre and traces of iron are met with; from Jiaber castle to Racca, a stratum of flint breccia to the depth of sixty feet, in many places, is superimposed on the sandstone; lower down to Zenobia, the only Plutonic rocks on the river are seen, they are lava and seem to have flowed across Syria, from the North West; from this to Hitt is all sandstone as above. At the latter

place, beds of marl and crystalline gypsum with mica slate, rest upon the sandstone, in some places the latter appears to have been upheaved very much. It is in this formation that the bitumen and naptha springs, so celebrated in antiquity, shew themselves. The strike of the hills bordering the valley of the Euphrates is chiefly from the N.N.W. except at Zenobia where the volcanic range mentioned above runs North West and South East; they have scarcely any dip. The river running parallel with the hills in primeval times, has cut the latter into a number of immense basins, varying from two to five miles in breadth; these are in many places connected by narrow channels and alternating form the valley of the upper Euphrates. The action of the river may be traced for a hundred feet above its present level, thereby demonstrating the corroding power of its stream, since the time when the waters first began to depart off the face of the earth. It is strange that as yet, we have not been able to discover any fossil remains in these formations.

Stations of the Steamers. *Musseib.*—Our first station after passing Hilla is at the town of Musseib, a place second in importance to Hilla, and of considerable traffic with the districts higher up the river. It contains about 5,000 inhabitants, chiefly Arabs, like those of Hilla. It may be considered healthy, though there is reason to believe, that its vicinity to the marshy districts of Babylon may bring it within the range of miasmatic fevers. From Musseib to Felugia the alluvial banks are low and liable to be inundated during the periodical rise of the river.

*Felugia.* — Is in the same latitude as Bagdad, being 34 miles west of the latter place, it is only the site of a large khan and ferry, being on the direct line to Bagdad, over a level country; here I proposed to establish an hospital in the event of the Euphrates being permanently opened for navigation, as the short distance between the two rivers would always render the Medical officer of the expedition available to both Flotillas. From Felugia to Hitt the distance is eighty miles, the country begins to rise, the banks are higher and well cultivated, chiefly by the Deleem Arabs. In this district on the left bank, are recognized the remains of the once royal cities of Perisabour and Ambar, also the supposed site of the battle of Cunaxa, from which may be dated the commencement of the misfortunes which afterwards befel the 10,000 Greeks, and caused them to undertake a retreat so honorable to themselves, by reason of the numerous difficulties under which it was accomplished.

*Hitt.*—Hitt, the Iss of Scripture and Izanedpolis of the Greeks, is eigh-

ty miles higher up the river than Felugia. It is situated upon the right bank on an isolated rock of limestone which has been scarped all round and rendered capable of defence; the houses terrace one above the other, which renders the place very conspicuous from a distance. The town is mean in the extreme, it boasts only of one minaret and has no bazar of importance. It contains about 3,000 inhabitants, chiefly Arabs of the Aghail tribe, the descendants of the Saracenic conqueror of Spain; besides a remnant of that most interesting tribe of Jews, the sons of Jehonadab spoken of in holy writ, and discovered by Wolf near Mecca. The people of Hitt have a sickly appearance, their faces being of a dark and chlorotic hue; this I attribute to the impregnation of their atmosphere with sulphurated Hydrogen from the bitumen springs, in the immediate neighbourhood of the town; as this gas is well known to be very injurious to animal life. In other respects this place may be considered healthy.

The district round Hitt, is a barren rocky waste, affording no supplies, except sheep and wheat, which latter is produced on the alluvial banks of the river. The trade of Hitt consists in the exportation of gypsum to Bagdad and Hilla for the purpose of building, also oil and salt, and in the making of bitumen boats and corrales, which are used extensively upon both these rivers and are of the same description as those mentioned by Herodotus. The springs from which this bitumen is obtained, are celebrated as having been visited by Alexander the Great, and the Emperor Trajan. They afford an exhaustless supply, and therefore it is very cheap; when mixed with coal dust or such refuse, it affords a valuable fuel to steamers, and as such it is worthy the attention of the Superintendent of the Indian Navy, as it might be exported to the Persian Gulf and Bombay, at a very cheap rate, and it would prove an economical way of consuming the many thousand tons of coal dust which must otherwise be lost. To the people of Hitt, bitumen is every thing; their drinking vessels, terraces, streets and canaux for irrigation are covered with it, and it affords fire and candles to them during the winter. The temperature of the spring in the heat of summer was 92° Fahr. and water running from it is drawn off and evaporated, by which means a great quantity of common salt is obtained, which is not however very pure, owing to its containing some nitrates or sulphates.

*River between Hitt and Anna.*—From Hitt to Anna the distance by the river is twelve miles, which is here much more rapid in consequence of the hills closing in, and numerous stone dikes extending half way across the river on each side, for the purpose of directing the force of the stream to

the large mills at their ends ; by which means the water has been raised from time immemorial for irrigating the land, but erroneously mistaken by Alexander the Great, as means of defence against his irresistible legions, thereby confounding them with similar structures thrown across the Tigris by the Persians. The alluvium is not so extensive in the district for cultivation and there is little jungle.

*Islands.*—Several picturesque little islands almost at equal distances, divide the stream between Hitt and Anna; three of these, Juba, Aloose, and Haditha, contain each about 500 inhabitants under the government of a Sheik, and afford the usual Arab supplies. Upon these islands are still found the remains of ancient Roman fortifications.

*Anna* is pleasantly situated on the right bank of the river, at the foot of the high hills which here bound the valley. The town extends for more than two miles along a narrow stripe of alluvial soil, which is here lined with a belt of fine date trees. Its Arab inhabitants are composed of the Aghail tribe, like those of Hitt, and number about 4,000, amongst whom are a few Jews but no Christians. The town has no bazars of importance, but its gardens are well supplied with fruit and vegetables ; it suffered very much during the great inundation of the river in 1831, after which came the plague and completed the depopulation of the place. Anna, though only four days journey to the north of Bagdad, possesses a much cooler climate. The heats of summer are, however, still great and sufficient to bring to maturity the fruit of the date-palm, and this place may be considered as the most northerly latitude of that invaluable tree. It is without doubt a very healthy place and well adapted for a station. Opposite to this town are several small islands also inhabited. After leaving Anna, on rounding the angle of the hills, which the river forms in coming from the north, there is another island and town called Rowa, embosomed in rich gardens, and subject to the Sheik of Anna. This may be considered as the limit to the territory as well as the power of the Pacha of Bagdad, for the Arabs to the north as far as Racca, though nominally under the Pachas of Aleppo, Orfa and Bagdad, do not in fact acknowledge either, living as they do in that happy independence which has characterized them since the times of their Patriarchal ancestors.

*River betwixt Anna and Deir.*—From Anna to Deir the next station, two hundred and forty miles, there is little worthy of remark ; the valley and consequently the alluvium become broader, varying from three to ten miles, with deep and extensive Tamarisk jungles. Throughout this fine

district all is desolation, there being no shadow of life or commerce, beyond the five Arab villages; which here and there obtrude themselves upon the banks, and we behold with admiration mingled with regret, the vestiges of the Scripture cities of Erzi and Rahabah, besides the Corsote of Zenophon and the Circessium of Diocletian, the latter situated at the embouchure of the "Chabour," a tributary of the Euphrates, which rises in the mountains of Sinjar.

*El Deir* is a town situated upon the margin of the sandstone hills on the right bank of the river; it has a mean appearance and contains about 2,500 Arabs, of Jewish extraction. It is governed by two Sheiks, who share between them the profits as well as the animosities of their separate people. The vicinity of Deir is well cultivated, and the town affords the usual Arab supplies. The oil made from the sirisim, and ghee appear to be the only articles of exportation; being on the great caravan routes from Damascus and Aleppo to Bagdad, it has a considerable transit trade. This is a very healthy place and well adapted for a depot being only five days from Aleppo, and six from Damascus.

*River betwixt Deir and Jiaber castle.*—From Deir to Jiaber castle it is one hundred and eighty miles by the river; the country is more elevated and interesting, the banks of the river being lined in many places with forests of mulberry and poplar, in addition to the everlasting tamarisk: cultivation is also more extensive, as we proceed northward, the great tribes of the Subka, Ahfadthly and Welder having settled down for the purpose of agriculture, like those on the lower part of the river. The ancient fortresses of Haliby and Telibee (probably founded by the Palmyrean Queen) defending a narrow pass of the river, and Racca, once the summer residence of the Caliphs, and at an earlier period, the site of Nicephorium founded by Alexander the Great, are amongst the most interesting places upon this part of the river.

*Jiaber Castle* on the left bank of the river in latitude 35° 54′ north has been a station of the Steamers during the greater part of last summer. It is of Saracenic construction and situated upon an isolated hill of sandstone and gypsum nearly three hundred feet above the level of the river which flows in a rich and beautiful plain, beneath its time worn ramparts. The ruins are of considerable extent but deserted; they contain a great number of serdaubs and vaults, which would prove invaluable to an army in this part of the country: it could be rendered easy of defence against the Arabs, but from the hills which command it in the distance, it could not

long resist the effects of artillery. The valley at Jiaber is about two miles broad, and is bounded on the opposite side of the river, by a bluff range of sandstone and gypsum hills, which we have named point Hobhouse, on account of the support given to this expedition by the late President of the Board of Control.

*River betwixt Jiaber and Belis.*—As this point is on the direct road to Aleppo about seventy-six miles off, it has been proposed as our most northerly station; by which the great serpentine course of the river to Belis, the nearest point to Aleppo will be avoided. In a medical point of view it is of no importance as both places are equally healthy.

From Jiaber to Belis is fifty miles by the winding of the river, which here has its course nearly west, and sixteen in a direct line; the banks are well cultivated by the Welder Arabs.

*Meschina or Belis.*—Meschina erroneously said to be the site of the park and palace of Baulas, consists of three fine Saracenic ruins on a low range of hills, which form the northern boundary of a verdant plain, rich with the varying floras of spring and autumn. This place is in lat. 55° 59′ north and is the nearest point of the river to Aleppo, which is about fifty-five miles nearly west of it, over a very level and hard road, well supplied with water and villages, after the first twenty-five miles are passed.

*River betwixt Belis and Birjeck.*—From Belis to Birjeck the distance is one hundred and five miles; the surrounding country presents the monotonous and deserted appearance which it does to the south, being always liable to the plundering excursions of the Bedouin Arabs. Belis may be also considered as the most northerly limit of the agricultural Arabs, as well as the most southerly limit of the pastoral Turcomans, who come down so far to feed their flocks in the rich plains bordering the river.

*Birjeck.*—Birjeck in latitude 27° north is a mean Turkish town, situated on the face of the hills on the left bank of the river, and fortified after the Saracenic style, though its ancient citadel is of Roman construction and fast tottering to ruin. It contains 6,000 inhabitants, chiefly Turks; its bazars are few and far from being well supplied, considering its favourable situation as being upon the great caravan roads from Aleppo, Antab, Diarbekir, Orfa and Mosal, with all of which places it has a considerable transit trade. Birjeck was the place selected for the erection of the steamers of the first Euphrates expedition, and from which place they commenced the descent of this great river. It was not considered healthy at that time as

they lost many of their crews from fever while there, but that mortality with more truth might be attributed to their operations carried on in the marshy plains of Antioch, where they first became ill, and also to the privations and hardships which they had afterwards to undergo in prosecuting the arduous undertaking of transporting the machinery thither. The climate of Birjeck, like all the northern parts of these rivers, comprises the extremes of heat and cold, the frost of winter continuing nearly three months and followed by heavy rains. We see nothing in all this to render the place unhealthy, on the contrary we believe it to be salubrious and admirably adapted for a depot and commercial intercourse. Birjeck is distant one thousand one hundred miles from the Persian Gulf by river navigation, ninety miles from Aleppo by an excellent road, and one hundred and eighty-seven miles from Iskanderoon, the nearest part of the Mediterranean, the latter part of this road being very hilly.

The regions which we have now surveyed lying along the banks of the upper Euphrates, have been celebrated from the most remote ages, from the time when Babel's proud tower sought the skies, until the destruction of the Caliphate by the inundating hordes of Tartars under Hulieu; during which, the rich capitals of Nineveh, Babylon, Selucia and Ctesiphon rose in succession to aggrandize themselves out of the ruins of its predecessor, and finally by their growing wealth and power becoming objects of ambition to Greece and Rome, they often drew together the well disciplined legions of the West to contend on the plains of Mesopotamia for the empire of the East. But, that which most commands our attention, as well as our admiration, are the military expeditions of Cyrus the younger and the emperor Julian along the left bank of this river as recorded by their respective historians, Zenophon and Ammianus Marcellinus. These, we regret, that the nature of this report, will not allow us to do more than notice; we can however add our unqualified belief in the Geographical and other facts therein contained, and we may mention that in case of any army from the North invading this country at the present day, we believe that they would have to follow not only in the very steps of their Greek and Roman predecessors, but would have also to take the same precautionary measures to secure supplies and keep up the discipline of their troops; otherwise the attempt would prove futile in a country impoverished as this has been, by the sword, and overrun by so many plundering troops of Arabs, who if they could not conquer, would always harass an army as of old, and be ever ready to cut off its detached parties.

*Surrounding Country.*—The surrounding country composes the Sy-

rian and Mesopotamian deserts, which may be said to be destitute of animal and vegetable life, the latter more through the neglect of man than nature, for the subsoil is good, and the rock a cretaceous sandstone yields abundance of water when bored into. The only villages are those on the great caravan route from Aleppo to Palmyra and Damascus; again on the Mesopotamian side, there is not a village betwixt the rivers for hundreds of miles, if we except those to the north of the Chabour river, on the roads to Orfa, Sinjar and Mosul. The description of this desert by Zenophon, now more than two thousand two hundred years back, proves so well the faithfulness of his narrative, and the accuracy of his observations, that we cannot do better than transcribe it in his own words. "The country (he says) was a plain throughout, even as a sea and full of wormwood, and if any other kind of shrubs or reeds grow there, they had all an aromatic smell, but no trees could be seen; bustards, ostriches, antelopes and wild asses, appeared to be the only inhabitants of the desert, and the fatigues of the march were alleviated by those of the chase." And if we add to these the animals which are met with along the banks of the river, as the stag, boar, the Asiatic varieties of the feline and canine class, and a few of the rodentia, besides many of the aquatic birds of Europe, a very general idea of the zoology of the country may be formed.

*Soil.*—In the valley of the Euphrates as I have stated above, the soil consists of a deep alluvial stratum which contains a great quantity of silicious particles and is of the same plastic nature as that of the Delta; the hills along the river are quite bare of soil and consequently void of vegetation; in the desert, however, the rock being of a soft and porous nature is covered with a sufficient quantity of debris for the purposes of cultivation, and where the resources of art have been brought to the assistance of nature in raising water, as in that part of the desert between Aleppo and the river, the whole might be turned into a fruitful field. Indeed it is only in this way, that we can account for the immense population which in former times existed in this country, as is evidenced by the crumbling temples and ruined towns which every where dot the face of the Syrian desert.

*Vegetation.* — The vegetation on the banks of the upper Euphrates is exceedingly scanty, which circumstance may be attributed to the banks of the river being high, and the neglect of all means of irrigation; as otherwise the soil and the climate are favourable to the production of all those plants peculiar to the temperate transition zone, which this country is in. Immense jungles of tamarisk, willow and glycirrhiza line the banks, as in the lower parts of the river; a few species of the compositæ

cruciferæ, umbelliferæ, ranunculaceæ, malvaceæ, and convolvolaceæ compose its flora. To these we may add the capparis spinosa, poterium spinosum, mesambryantherum crystallinum, and cucurbitous plants; besides several species of salicorniæ and mimosæ, all of which are cropped by the camel, that pattern of humble and patient endurance. Anemones in great variety cover the desert in spring as with a carpet, and the varied class of the labiatæ impregnate the air with their odours, as the season advances. The vegetable productions cultivated by the Arabs are, wheat, barley, durra (the holcus sorgum of Linneus) which rivals that of Egypt, sesamum orientale, from which they procure their oil, besides cotton, and rice. The date, grape, orange, lemon, mulberry, fig, pomegranate, zujub, (zizyphus lotus) melons and cucumbers, grow to the greatest perfection, and as we proceed northwards towards Birjeck, the apple, cherry, peach, plum and apricot rival those of Europe; to which we may also add most of the culinary vegetables of that country. In conclusion, we may remark, that what Malte Brun said of the state of Syria and its productions, may with equal justice be extended to the banks of the Euphrates. "That if the advantages of nature were duly seconded by the efforts of human skill, we might in the space of twenty leagues bring together in Syria, all the vegetable productions of the most distant countries;" a combination of circumstances which can rarely be found in the most favoured lands, and shews how indulgent nature has been, did not man mar all with an impious hand.

*Climate.*—The observations which we made in our last year's report respecting the climate of the southern part of these rivers, may with propriety be extended as far north as Anna, for there is no very sensible alteration until we arrive near that place; but there the difference becomes very apparent, the spring being cooler and more prolonged, the great heat of summer diminishing by twenty per cent as compared with Bagdad, and the winter extending over a period of three months, during which there is hard frost. The seasons we consider to be in every respect a month later than those to the south, and the temperature twenty per cent less; some idea of the summer heats being less oppressive than Bagdad, may be formed from the fact, that we never had occasion to live or sleep out of our cabins, the contrary being absolutely necessary at the former place. The hot season however is not so healthy on account of the great diurnal range of temperature, which causes heavy dews to descend and exposure to these was generally found to be followed by fever. The prevailing winds are the same as those met with in the lower part of the rivers, viz. the North-west and South-

east; the latter prevail more frequently during the spring and autumn, and are accompanied often times with lightning and an oppressive state of the atmosphere, during which, headache, diarrhœa, and attacks of ague, if the patient has been subject to this fever, are very common. The baneful effects of this wind in the latitudes of the Mediterranean, have been long known to the ancients. Celsus and many others speak of it, and Horace in the Ode to his friend Postumus thus mentions it,

"Frustra per Autumnos nocentem
Corporibus metuemus Austrum"

I myself have paid particular attention to this subject, and I am convinced, that the effects upon the human system which attend this wind are not the result of atmospheric changes, for if any thing, the temperature is then more equal, but owing rather to electrical changes in the atmosphere which re-act upon the blood. This is a point of the most absorbing interest, and worthy the attention of those who have opportunities for more extended observations, as by it much light may be thrown upon the pathology of fevers and cholera: —analogous to these effects are those produced by the hot winds, and sand squalls which prevail on the upper part of these rivers. It will be remembered that it was during one of these squalls, H. M. Steamer Tigris was lost on this river, and in reference to this deplorable catastrophe as well as in its relation to the diseases mentioned above, I trust I shall be excused for inserting the following extract from my Journal. "These squalls for the most part come from the North-west and North-east, they prevail oftener about sunset than any other time of the day, and are not unusually attended with lightning; the body of sand moving in a pyramidal column with its base upon the ground, is carried round to the right in a spiral form sucking up as it were the sand below it. As they mostly come from the North, or the hills and valleys neighbouring the Euphrates, they appear to be owing to a cold current of air rushing into the more rarified strata, when, owing to the disengagement of caloric, electricity is likely generated, and the finer particles of sand being drawn up attract and repel each other in turn, moving in a corkscrew direction from right to left, while they are directed along by the impetus of the current, the vis a tergo, until it moderates, or its base comes in contact with a hill or jungle thereby breaking up the column; on the equilibrium being established between the particles of sand and air, they cease to repel each other any longer." These squalls are not unfrequently accompanied with large nimbi, which obscure the horizon, and portend not a little the destruction which is coming. The

east; the latter prevail more frequently during the spring and autumn, and are accompanied often times with lightning and an oppressive state of the atmosphere, during which, headache, diarrhœa, and attacks of ague, if the patient has been subject to this fever, are very common. The baneful effects of this wind in the latitudes of the Mediterranean, have been long known to the ancients. Celsus and many others speak of it, and Horace in the Ode to his friend Postumus thus mentions it,

"Frustra per Autumnos nocentem
Corporibus metuemus Austrum"

I myself have paid particular attention to this subject, and I am convinced, that the effects upon the human system which attend this wind are not the result of atmospheric changes, for if any thing, the temperature is then more equal, but owing rather to electrical changes in the atmosphere which re-act upon the blood. This is a point of the most absorbing interest, and worthy the attention of those who have opportunities for more extended observations, as by it much light may be thrown upon the pathology of fevers and cholera:—analogous to these effects are those produced by the hot winds, and sand squalls which prevail on the upper part of these rivers. It will be remembered that it was during one of these squalls, H. M. Steamer Tigris was lost on this river, and in reference to this deplorable catastrophe as well as in its relation to the diseases mentioned above, I trust I shall be excused for inserting the following extract from my Journal. "These squalls for the most part come from the North-west and North-east, they prevail either about sunset than any other time of the day, and are not unusually attended with lightning; the body of sand moving in a pyramidal column with its base upon the ground, is carried round to the right in a spiral form sucking up as it were the sand below it. As they mostly come from the North over the hills and valleys neighbouring the Euphrates, they appear to be owing to a cold current of air rushing into a more rarified stratum, owing to the disengagement of caloric, electricity is likely generated, and the finer particles of sand being drawn up attract and repel each other in turn, moving in a corkscrew direction from right to left which they are directed along by the impetus of the current, the vis a tergo, until it moderates, or its base comes in contact with a hill or jungle thereby breaking up the column; on the equilibrium being established between the particles of sand and air, they cease to repel each other any longer." These squalls are not unfrequently accompanied with large nimbi, which obscure the horizon, and portend not a little the destruction which is coming. The

symbolic language of Scripture gives a good idea of its power, when it says, "they shall be chased as the chaff before the wind and a rolling thing before the whirlwind;" and again "your destruction cometh as a whirlwind." Its impetuosity is no less great than the stillness which succeeds it, is sudden. These squalls occur from May to September; they can never prove an obstacle to the navigation of this river, as the accident which occurred to the Tigris was owing, chiefly, to her peculiar construction and being at the time top heavy.

*Rains.* — The quantity of rain which falls upon the upper Euphrates is sometimes very considerable, being found sufficient for the irrigation of the spring crops; it is however often precarious, and this year there was scarcely any, in consequence of which the vernal crops failed, the desert did not assume its wonted verdure, and the Arabs were put to great straits for herbage for their cattle; the autumnal rains were also deficient and the river did not rise as usual during the winter.

The thermometrical observations made by us at or near Jiaber castle, which is in north latitude 35° 54′ give the following as the result of the diurnal range of temperature.

Thermometer table shewing the average maximum, minimum and medium of temperature, as registered from the Thermometer kept in the H. C. armed Steamer "Nimrod" upon the upper Euphrates, from May 1841 to February, 1842.

| Place of observation. | Month of the year. | Thermometer. | | | Wind and Weather. |
|---|---|---|---|---|---|
| | | Maximum. | Minimum | Medium. | |
| Between Anna and Jiaber . . . . . | May . . . . . | 81 | 65 | 76 | 22 days N.W. to E. 5 days S.W. 4 days calms and 2 days rainy. |
| Jiaber and Belis . . . | June . . . . . | 89 | 67 | 80 | 25 days N.W. and W. 2 days S.W. 2 days calm and one day rain. Sand squalls frequent. |
| Ditto. | July . . . . . | 92 | 74 | 85 | 27 days N.W. 3 days S.E. and 1 W. S.W. Fine clear weather. |
| Ditto. | August . . . . . | 95 | 74 | 87 | 25 N.W. and 6 S.W. Hot and sultry weather with occasional sand squlls. |
| Ditto. | September. . . . . | 85 | 64 | 77 | 26 days N.W. and 4 days S.E. variable, with cloudy weather, lightning with meteors. |
| Ditto. | October. . . . . | 83 | 59 | 69 | 18 days N.W. 13 days S.W. and variable, day time clear and cool. |
| Below Jiaber . . . | November *A*. . . . | 67 | 49 | 52 | S.E. variable with foggy weather and slight rain, S.E. prevailing. |
| Hanaday Ford . . . | December* . . . . | 59 | 34 | 48 | N.E. and S.E. varinble with hard frost and fine clear weather |
| Ditto. | January . . * . . . | 48 | 29 | 46 | N.E. and S.E. with some heavy rain towards the end of the month. |
| Racca . . . . . | February* . . . . | 57 | 37 | 45 | N.E. Prevailing with occasional light showers of rain. |

*A*. Often from 28 to 36 on deck at sunrise.

* During these three months the Thermometer ranges at sunrise from 17° to 34.

*Population.* — We have already spoken of the population of the towns, and the few observations which we made last year respecting the same class, refer with equal force to those on this river. The agricultural Arabs along the banks of the upper Euphrates are composed of the following great tribes.

| | |
|---|---|
| 1 Deleem. | 6 Subkha. |
| 2 Agadaut. | 7 Afadthly. |
| 3 Jabour. | 8 Welder. |
| 4 Aboo Mahomed. | 9 Beniseed. |
| 5 Buggarah. | 10 Mowally and Hadideen. |

The two latter tribes are pastoral, and form part of the irregular troops of the Pacha of Aleppo and Orfa, but the other tribes pay a very doubtful allegiance to the Turkish Government, and not unfrequently take part with the great nomade tribes of Anezay and Shummar, to plunder the caravans, and set the Government at defiance. In stature and constitution they seem superior to the southern Arabs, and they bear the extremes of heat and cold in a wonderful degree, the latter being often rendered more severe through their want of clothing and a scanty allowance of food.

Prevailing Diseases. — The diseases which we had occasion to notice last year as prevailing amongst the natives on the southern part of the river, extend themselves to the north, with the exception of intermittent, remittent fevers, and dysentery; these scourges of almost every eastern climate are seldom met with on the upper Euphrates, which may be attributed to the absence of marshes, and the dryness of the soil. The other diseases of which we spoke, such as scrofula, opthalmia, rheumatism, and cutaneous diseases, are rather the result of poverty and filth, than the prejudicial effect of the climate.

Acute inflammatory diseases, are not to be expected amongst a people of such temperate habits as the Arabs, but chronic affections of the mucous linings of the thoracic and abdominal viscera are very common at the vernal and autumnal changes.

Syphilis is seldom or never met with, but of late it has become rather common, owing to the women of the late Egyptian army spreading over the country, after Ibrahim Pacha had evacuated Syria. Endemic and contagious diseases, such as small pox and measles, are very rare; but the plague in 1830 depopulated most of the villages from Aleppo to Bussora.

*Health of the European Crew, and Native Christians.* — The num-

ber of cases included in the annexed annual return, amounts to 177 which is nearly double that of our crews, but we may here observe that this includes all the re-admissions as well as fresh cases. From June to October, the Steamers remained almost stationary at or near Jiaber Castle, the most convenient place to Aleppo; during which time though not exposed to the sun or water, the crews were attacked more or less with a slight inflammatory fever which I shall describe hereafter. In October we began to descend the river and complete its survey, this led to some exposure on the part of the men, and consequently to a corresponding increase of sickness, which assumed a type in character with the cold damp weather, being mostly slight cases of common continued fever, rheumatism, and affections of the mucous membranes; and if we take into consideration the arduous and enterprizing undertaking in which they were employed, viz. the ascent and descent of this great river for a distance of more than one thousand miles from the Persian Gulf, during which they were often exposed to the effect of a vertical sun while working in the water, it must be apparent, that they enjoyed a very fair immunity from disease, especially as not one case has terminated fatally, a circumstance of rare occurrence in countries under similar parallels of latitude, and which is a good proof of the salubrity of the climate. The relative proportion of sickness occurring amongst the native portion of the crews, almost all of them being natives of this country, as compared with that of the Europeans, is as one to four, which shews the benefits resulting from climatization; for these natives being Christians have the same allowance of diet and grog as the Europeans, and are in all other respects on a similar footing. We shall now make a few remarks upon some of the diseases included in the return, the classification of which is far from being convenient, but I adopt it, being unwilling to depart from what I understand is the form prescribed by the Medical Board.

*Continued Fever.*—The cases of continued fever included in the return prevailed chiefly in the commencement of the cold weather; they were attended with very little excitement of the system, and soon yielded on the secretions being restored to their natural state.

*Remittent Fever.*—These occurred at or near Felugia on the lower part of the river; they were not attended with such violent biliary symptoms as those of Bussora, the cephalic however were more urgent; they required active depletion and mercurial purgatives under which they soon subsided.

*Intermittent Fever.*—We have already said that miasmatic fevers do

not prevail on the upper Euphrates, owing to the dryness of the soil, and climate; therefore the cases of this fever were for the most part relapses in those men who had got that fever the preceding year at Bussora or in the Persian Gulf.

*Inflammatory Fevers.* — These it will be seen form the largest and most serious class of diseases which have occurred amongst us. They prevailed chiefly in the months of June and September when the diurnal range of temperature was greatest, averaging upon the deck a range of thirty degrees, with cold raw mornings, occasioned by the bleak north-west, and easterly winds. On our first arrival at Jiaber Castle in June, it was most prevalent amongst us attacking almost every one; strong north-westers blew in the mornings and evenings, attended with lightning and clouds of sand, while the thermometer ranged from 58° to 90° Faht. We believe the checked perspiration occasioned by the above atmospheric vicissitudes to be the chief exciting cause of the fever, for our crew at this time were neither exposed to the direct effects of the sun or water, as the vessels were then stationary; at the same time we must not discard the highly electric state of the atmosphere and the periodic changes of the moon, which would appear to have an indirect effect upon the sanguiferous system and thereby predisposing to fever, as it was mostly present when either one or other of the above states prevailed.

This fever comes on suddenly, and the patient does not generally feel indisposed until the day preceding the attack, he then usually feels languid, and sore all over, as if he had got a severe cold; after this, his back, loins, and extremities become very painful, so much so, that he can scarcely bear to lie in bed. This is succeeded by severe headache, chiefly referred to the forehead, and vertex, the eyes are suffused, the face flushed and the expression wild, the skin is very hot, urine red and scanty, thirst urgent, tongue loaded and white, bowels mostly confined, or else rather loose, with pitchy secretions, the pulse varies from 98 to 115 full and bounding; to which may be added great restlessness and anxiety on the part of the patient. This state of excitement may be arrested in twenty-four hours, by active antiphlogistic treatment; we did not allow it to proceed further, knowing that delirium would be the result, and a fatal termination, as happens from this fever along the shores of the Mediterranean. The above is the most aggravated form of this fever, which appears to resemble very much the Febris ardens of authors, only, as I have stated above, it has not been produced by exposure to the sun's rays; the generality of our cases were of a milder description, being characterized merely by the muscular pains of

the back and extremities, followed by slight pyrexia and dark fetid motions.

*Treatment.* — The treatment adopted in the first and severest form, was active depletion followed by antimonial diaphoretic and mercurial purgatives. In the milder form as it occurred in most of our natives, an emetic in the first instance, followed by calomel and Dover's powder, and a mild purgative the ensuing morning, were sufficient to arrest the fever and improve the intestinal secretions. Convalescence is rather quick, though the patient for some time after complains of giddiness and debility. The characteristics of this fever, are the severe cephalic and lumbar pains, followed by a hot skin, a full and bounding pulse, and dark pitchy motions. That it is purely inflammatory, we conclude from its rapid course, and quick termination, being unattended with remissions and yielding to the lancet without ptyalism; the blood drawn being usually very dark, much cupped and buffy. While examining the Topography of the north of Syria, I found that this fever prevails from the river to the Mediterranean; the cases* No. 1 and 2 appended to this report, will illustrate the severe form as it occurred in the steamers, while the case No. 3 will show it, as it is met with in Aleppo.

*Diarrhœa.*—Eleven cases of diarrhœa are returned; they were all of the most mild description, and as I have remarked before, they appear to have some remote connexion with the state of the atmosphere, for they invariably occur during the prevalence of a southerly wind, or the sand squalls, and lightning; and although few are actually returned, yet it is not unusual for most of the crew under such circumstances to complain of griping pains and pitchy motions, and that without any error in diet.

*Chronic Gastro-Enterite.* — The case included under the head of Dysentery is more properly Chronic Gastro-Enterite; it occurred in Gunner Wm. Brewer of the 2d Battalion, Bombay Artillery; this disease had its origin in Belgaum and re-appeared upon his getting Bussora fever last year. He has been subjected to almost every treatment in succession without any permanent advantage; small doses of mercury and Dover's powder with leeches, blisters and hot baths, were first tried; then mild astringents, with emollient enemata, extract of gentian and ipecacuanha, preparations of iron and nitrate of silver, all these have alike failed; cupping him every three weeks and the administration of Dover's powder and anodyne enema-

* The cases are not inserted.—C. M.

ta, have afforded most relief. The natural consequence of both the disease and treatment has been to debilitate him very much, but as he has been improving since the cold weather set in, we trust that the sea voyage on his way to the Presidency will tend to re-establish his health.

*Hepatic Affections.* — Two of these are re-admissions, and the other three happened to men who had been ill before with the same disease in Bombay.

*Thoracic Affections.*—These comprise one case of pneumonia, one of bronchitis, and one of diseased heart (hypertrophy). The latter is that of an artillery-man, who has been under treatment for the last eight months without benefit, and will require to be sent down to be invalided.

*Abdominal Affections.*—These are for the most part cases of dyspepsia, and as the greater number of these occurred during the hot weather, I am inclined to attribute them to the difficult supply, and often times entire want, of vegetable food. This would also account for many of our men being affected with worms, chiefly lumbrici. There is also another cause of dyspeptic complaints and even fever during the hot weather, which I consider it my duty to bring to the notice of the Medical Board, namely the issuing of the half dram of grog to the crews, at noon, before dinner instead of after it. Its injurious effects are so apparent to every one who has been in a ship, that I need not make any further remarks; suffice it to say, that if the health of our sailors was consulted they ought not to be allowed grog before 4 P. M. during the hot weather, and even then they should only be supplied with half the present allowance.

*Rheumatism.*— The cases of Rheumatism were so slight as scarcely to deserve the name.

*Testicle disease of.* — Only two cases of diseased testicle; one is hernia humoralis and the other is chronic enlargement, the latter proved very obstinate and required a long course of alterative medicine, besides frequent cupping and blistering over the sacrum. It returned three different times from the patient being exposed to wet.

*Other Diseases.* — These are for the most part anomalous affections, occurring in those who are anxious to skulk in Hospital; three cases of otitis are included amongst these, inflammation of the aural passages would appear to be rather common in the hot weather, owing to the cold north winds which blow towards the morning.

*Surgical Diseases.*—None of any consequence except one severe contusion of the upper arm, caused by machinery and followed by extensive sloughing.

Concluding Remarks.—In the foregoing remarks upon the climate and diseases of this country, I have endeavoured to condense them as much as possible, so much so, that I fear I may have done it at the expense of being misunderstood; I trust however, that as I have confined myself simply to the facts which came under my own observation, the physical nature and resources of the country, will be sufficiently apparent, so as to enable the Medical Board to form a correct idea of the scene of our operations as well as the difficulties which might be expected to attend them. We have stated that the climate has the inconvenience of being rather hot in summer, but then it is free from endemic disease, and for the succeeding nine months, there is not a finer climate in the universe. The diseases in the annexed* return are not a fair criterion of what might be expected to prevail amongst Europeans placed under more favourable circumstances, for ours were employed in the most harassing duties of surveying and sounding a river one thousand miles from the sea, the accounts of which have been hitherto few and erroneous; but even the sickness which we have had to contend with is very trifling, considering that our crews are composed of men whose constitutions have been more or less impaired by a residence in India.

In conclusion we may observe that should this country ever become the theatre upon which the British army would have to engage, the fullest confidence might be placed in the salubrity of the climate; and if our report last year upon the southern part of Mesopotamia be referred to, it will be seen that it also has a very good climate, if we except Bussora and its vicinity.

I am also of opinion that the climate of southern Mesopotamia, would agree better with an Indian army than a northern one, as I have observed they do not bear well the sudden transition from heat to cold, and for a like reason, I would be disposed to keep the Europeans to the north in order that they might avoid the great heat and more humid atmosphere of the south.

* The return is omitted.—C. M.

## Article II.

### *Annual Report of the Native General Hospital at Bombay, for the year*, 1841. By A. Graham, Esq.

Presented by the Medical Board, May 1842.

General Observations. — The * admissions during 1841 exceed those of 1840 while the deaths fall short by 28, thus making a percentage of 13. 6 or rather more than 2 per-cent less than that of the preceding year. This difference, however, is chiefly to be attributed to the almost total absence of epidemic disease which had prevailed to a considerable extent in 1840, during which period cholera destroyed a number of natives in the hot weather, and small pox carried off several from the months of January to July. For five preceding years, these djseases have periodically prevailed with considerable virulence. The last year, however, was remarkably free from any epidemic. Only one case of small pox occurred in the month of January as will be seen by the abstract of diseases given below. The abstract will also shew that the prevailing diseases were Cachexia, Diarrhœa, Dysentery, Fractures, Fevers, Hepatic Affections, External and Thoracic Inflammations, Syphilitic Affections, Scorbutus, and Scorbutic Ulcers, Wounds, and anomalous cases.

It seems almost superfluous again to refer to the cause of the great mortality, occurring in the Native General Hospital. — This circumstance has been often forcibly adverted to in former reports. It arises from the extreme state of disease and destitution under which the patients are admitted. ' For such cases our only resources were palliation of distressing symptoms, to afford an asylum, and thus to mitigate the sufferings of humanity.'

* Number of sick.

| | |
|---|---|
| Remained 31 December, 1840. | 129 |
| Admitted in 1841. | 1950 |
| Discharged | 1639 |
| Died in Hospital | 271 |
| Remained 31 December, 1841 | 169 |
| Average daily number of sick for the year | 146.17 |
| Average number of convalescents | |
| Died without receiving medical treatment | 17 |

In addition to those included in the Return, there were 17 who died so soon after admission as almost to preclude any medical means. Their diseases were as follows: —

| | |
|---|---|
| Anasarca | 1 |
| Cachexia | 7 |
| Dysentery | 3 |
| Fevers | 3 |
| Gangrene of the Penis | 1 |
| Hernia strangulated | 1 |
| Pneumonia | 1 |
| | 17 |

*Annual Return of sick of the Native General Hospital, from the 1st of January to the 31st of December.* 1841.

| Diseases. | Remained 31st December 1840 | Admitted 1841. | Total. | Discharged. | Died. | Remaining. |
|---|---|---|---|---|---|---|
| Apoplexy | .. | 4 | 4 | .. | 4 | .. |
| Asthma | .. | 7 | 7 | 7 | .. | .. |
| Cholera biliosa | .. | .. | .. | .. | .. | .. |
| ——,—— Spasmodica | .. | 2 | 2 | 1 | 1 | .. |
| Cutaneous Diseases | 10 | 156 | 166 | 149 | 5 | 12 |
| Cachexia | 4 | 73 | 77 | 32 | 45 | .. |
| Diarrhœa | 1 | 20 | 21 | 6 | 15 | .. |
| Dropsical Affections | 2 | 25 | 27 | 13 | 12 | 2 |
| Dislocations and Sprains | .. | 1 | 1 | 1 | .. | .. |
| Delirium Tremens | .. | 5 | 5 | 3 | 1 | 1 |
| Dracunculus | 1 | 31 | 32 | 30 | .. | 2 |
| Dysentery | 7 | 112 | 119 | 59 | 51 | 9 |
| Fractures | 3 | 30 | 33 | 25 | 6 | 2 |
| Fevers — Remittent | 2 | 45 | 47 | 29 | 16 | 2 |
| Fevers — Intermittent | 6 | 192 | 198 | 177 | 5 | 16 |
| Gonorrhœa | 2 | 44 | 46 | 42 | .. | 4 |
| Hepatic Affections — Acute | 2 | 15 | 17 | 10 | 4 | 3 |
| Hepatic Affections — Chronic | 1 | 17 | 18 | 10 | 8 | .. |
| Inflammations — External | 3 | 39 | 42 | 36 | 3 | 3 |
| Inflammations — Cephalic | .. | 5 | 5 | 3 | 1 | 1 |
| Inflammations — Thoracic | 1 | 50 | 51 | 22 | 19 | 10 |
| Inflammations — Abdominal | 1 | 3 | 4 | 4 | .. | .. |
| Affections of the urinary organs | .. | 1 | 1 | .. | .. | 1 |
| Mania | .. | 3 | 3 | 2 | .. | 1 |
| Ophthalmic Affections — Acute | 3 | 13 | 16 | 16 | .. | .. |
| Ophthalmic Affections — Chron | 4 | 28 | 32 | 30 | 2 | 2 |
| Phthisis Pulmonalis | 2 | 11 | 13 | 11 | .. | 2 |
| Rheumatism | 19 | 242 | 261 | 219 | 15 | 27 |
| Spleen disease of | .. | 8 | 8 | 6 | .. | 2 |
| Syphilitic Affections — Primary | 18 | 180 | 198 | 180 | 7 | 11 |
| Syphilitic Affections — Secondary | 8 | 43 | 51 | 41 | 4 | 6 |
| Small Pox | .. | 1 | 1 | 1 | .. | .. |
| Scurvy | 1 | 56 | 57 | 46 | 3 | 8 |
| Ulcers | 11 | 109 | 120 | 93 | 9 | 18 |
| Wounds | 5 | 211 | 216 | 200 | 8 | 8 |
| Other Diseases | 12 | 168 | 180 | 135 | 27 | 18 |
| Total | 129 | 1950 | 2079 | 1659 | 271 | 149 |

*Apoplexy.* — Of this disease there were four admissions all of the sanguineous form, and all equally unfavourable in their termination. Three of them were brought from off the public roads, and the fourth from Mazagaon. Of the history of two of them nothing could be ascertained that could be relied on ; regarding the other two, one of them was stated by his friends to have been in good health previous to the occurrence of a scuffle, originating in play ; the attack in the other case arose from excessive drinking. A post mortem examination of one of them, disclosed chronic enlargement and disease of the left meningeal artery which had thrown out excrescences of a warty character : these must have been of long standing. A considerable quantity of blood was also effused between the membranes and the brain. The subject was of a spare, thin habit, and of sickly appearance. Bleeding, both general and local, cold applications to the head, sinapisms to the legs and feet, drastic purgatives, and active enemas formed the plan of treatment.

*Asthma.*—Seven admissions of the spasmodic form of this disease occurred in old broken down subjects. They were all either successfully treated, or relieved, on the usual plan, namely by emetics, antispasmodics of ether, hyoscyamus, colchicum, opium, and cónium, together with expectorants of ammoniacum, squills, tartarized antimony, and digitalis ; the application of blisters, rubefacients or the tartar emetic ointment, to the chest, or between the shoulders, and the administration of tonics, after the subsidence of the more urgent symptoms, were also had recourse to.

*Cholera.* — Two cases of the spasmodic form of the disease were admitted in January, one of which terminated fatally. In the successful case the patient, a peon of Collector Glass's establishment, was brought to Hospital in the commencement of the stage of collapse when the pulse had begun to fail, and four hours after the purging had commenced. There had not been any vomiting, but the aspect was much sunken, the voice feeble and puerile, pulse quick and weak. He had arrived only a day or two previously from Panwell. The disease was then prevailing on the Poona road, and it is therefore probable that it might have been contracted in that quarter some days before its developement. The treatment consisted in the exhibition of calomel and opium and effervescing draughts repeatedly given, and alternated with stimulants of brandy, camphor, ammonia, &c. Blisters to the epigastrium and sinapisms to the legs and feet. After admission, vomiting and slight, yet painful spasms of the limbs commenced with

great and increasing anxiety, the purging ceased; re-action began when three or four doses of the medicines had been given, and after this he went on well. The powers of the stomach were greatly impaired for several days afterwards, but gradually recovered under the use of hydrarg. cum creta, Dover's powder, and tonics. He was discharged well, but weak on the fifth day.

*Cutaneous Affections.* — Under this head one hundred and fifty-six cases were admitted, five of which died. These all occured in lepers who had long been victims of the disease in its most formidable and disgusting forms. All had lost the greater number of the fingers and toes, and some even a portion of the foot. In these instances no hope of cure could be entertained, and all that could be effected towards their relief, consisted in the application of astringent lotions to the ulcerated parts. These sometimes, for a while, put on a healthy appearance, yet, although tonics and stimulants and nourishing food, were at the same time given, diarrhœa, of a most intractable description, ultimately supervened and destroyed life.

The other cases under this head, consisted chiefly of Psora, and Psoriasis, and were not sufficiently interesting to call forth any remarks.

*Cachexia.* — Under this designation seventy-three were admitted, forty-five of which ended fatally. The casualties happened generally in individuals of dissipated habits, and who had long been affected with pulmonary, intestinal, and hepatic affections. In some instances syphilis and the abuse of mercury, as prescribed by the native Hakeems, would appear to have destroyed the constitutional energies, though these cases were not sufficiently marked to admit of being entered under general affections.

The state of emaciation and debility in which the cachectic patients were admitted, generally left but little ground to hope for even a partial restoration to health, and this will account for the numerous casualties that occurred.

Of the few restored to comparative health, a small number only seemed capable of earning a livelihood. The termination of the fatal cases was, in most instances, by diarrhœa. The treatment pursued comprised cordials, tonics, expectorants, and anodynes, together with a nourishing diet, and the liberal use of Port wine, and spirits. The astringent most valuable in these cases, was the sulphate of copper and opium. One or two grains of the former, with two or three of the latter, two, three or four times daily.

*Diarrhœa.*—Of this there were twenty admissions, six of which ended

fatally. The deaths happened in individuals who applied for aid in a very advanced stage of the disease.

The treatment was varied, according to the circumstances, and generally consisted in the exhibition of chalk mixture, combined with opiates and astringents.

In cases of great severity or long continuance, the sulphate of copper and opium were had recourse to. On the disease yielding, light tonics consisting of infusion of gentian, colomba, or cusparia, and a bland nutritious diet were prescribed.

*Dropsical Affections.* — Twenty-five admissions, and twelve deaths occurring in patients as the sequelæ of extensive and long continued visceral disease or as the sequence of fevers. Albuminous urine frequently existed. What gives rise to this condition or alteration in the urine seems unknown. One singular case that came under observation may be remarked upon. The patient was a married woman who had long suffered from disease of the uterus, irregularity of the catamenia, and a frequent muco-sanious discharge from the vagina. The urine was copious and clear, appetite little impaired, and general health not much affected. She at first, supposed that she was pregnant, but from the long continuance of the ailment this idea was abandoned. After a little preparatory treatment paracentesis abdominis was performed, a small portion of a glairy fluid escaped though a large sized canula. This fluid coagulated immediately on exposure to the air shortly after the operation, and while the patient was warm in bed, a large quantity of the same fluid was freely discharged amounting to several pints. This viscid, gelatinous effusion was most likely caused by subacute or chronic inflammation of the peritoneum. The sudden discharge caused great weakness and sinking which were removed by a light bandage and cordials. The fluid soon re-accumulated to its former extent, and becoming exceedingly anxious and alarmed she was allowed to return home and shortly afterwards died.

Another case requiring a few observations may be alluded to. This was consecutive to and accompanied with a chronic pulmonary affection. In the primary disease auscultation shewed the existence of great contraction of the bronchial tubes. Paracentesis abdominis was performed and four or five pints of fluid drawn off with relief. The bronchial affection, however, continued throughout with occasional intervals of abatement. The treatment consisted in cupping, leeching, blisters and tartar emetic ointment. — Tartar emetic alone and combined with saline purgatives internally; and calomel, squills, digitalis, and colchicum, were also exhibited

with cream of tartar for common drink. Under this treatment he had nearly recovered when he suddenly quitted the Hospital, and returned in a month with his ailment of a more intense character than at any former period. The scrotum was enormously distended with the dropsical effusion. Scarifications were made and the watery oozing from them was most extensive, and continued until nearly all the dropsical symptoms disappeared; recourse was again had to the diuretics, and the former plan of treatment with the most beneficial results. The diuretics which excite the absorbing vessels and remove impediments to the lymphatic and venous circulation, Dr. Copland states, are all doubtful, excepting the preparations of Iodine, and of these the Iodide of iron in leucophlegmatic habits, ending in anasarca affords the most likely hope of relief, but of this our experience is still deficient.

*Dislocations and Sprains.* — Only one case of dislocation, that of the humerus into the axilla, occurred.

*Delirium Tremens.* — Five admitted, one of which proved fatal. The casualty occurred in a Portuguese of very dissipated habits. On the third day after being received into Hospital, he was in a highly excited state, having been unwell for several days previous, during which period he had taken no food, but had drunk large quantities of brandy; tongue was of a dull red colour. He had great pain and tenderness in the region of the liver and stomach, occasional vomiting on taking fluids; opium, combined with antimony and camphor, was freely given at intervals and seemed for a time to be beneficial. Ultimately, however, great restlessness and debility supervened, with cold clammy perspirations when stimulants of brandy and ammonia combined with anodynes, were given, and blisters were applied to the back and stomach, and sinapisms to the legs and feet, but without any good results. He had previously suffered several times from the same complaint, and had been once or twice in the European General Hospital. In one of the successful cases an East Indian, a printer, who was greatly addicted to drinking and in whom all the symptoms recorded above existed, though they had been of shorter duration, the gastric affection was less severe, and the constitutional powers less impaired. In this case 78 grains of opium and 27 grains of morphia in tincture were taken in nine days before the symptoms entirely yielded. In two of these nine days, about 8 grains of morphia were given daily before sleep was induced, and of the opium 18 grains were exhibited in one day and 39 grains in another. This exemplifies the peculiar state of the nervous system in this complaint and

shews the great extent to which it is sometimes necessary to exhibit anodynes to maintain and at last gradually restore its functions. In some instances of this disease the cold affusion was found an auxiliary.

*Dysentery.* — One hundred and twelve admitted. Fifty-one deaths occurred, chiefly in patients who came to Hospital either in the advanced stage of the acute or in the chronic form of the disease. In the first, calomel and opium, leeching, blisters, fomentations, blue pill, or the hydrarg. cum creta, combined with ipecacuan. and gentian extract, or with Dover's powder, or the acetate of lead and opium, or the chalk and opium powder, with anodyne enemata, or opiate suppositories, were the means used. In the latter, sulphate of copper and opium was found the most valuable remedy that could be used, in doses of from 1 to 3 grains of the former and 2 to 5 or 6 grains of the latter, thrice daily, or even more frequently in extreme cases. In the successful cases general or local blood-letting or both. Twining's combination of blue pill, ipecacuan. &c. calomel with ipecacuan. and opium, and when much blood was voided, the acetate of lead and opium from 2 to 6 grains of the former, and 3 to 6 of the latter with diluted vinegar as drink to prevent the acetate passing into the state of carbonate in the bowels. These with the application of blisters, followed by light, astringent, bitter tonics during convalescence, nourishing diet and Port wine, were the principal means employed.

*Fractures.* — Thirty admissions occurred under this head, six of which terminated fatally. These were compound and comminuted fractures of the bones of the lower extremities, attended with much constitutional irritation, and leaving no alternative but operations to which the patients would not submit until it was too late. In one case affection of the brain occurred after the accident, and which, though relieved, by the usual depletory means, carried off the patient. Inspection of the body, however, disclosed the cause of death to have been disease with hypertrophy of the heart. There were no symptoms during life to indicate the existence of this disease. Several amputations were performed. One at the shoulder proved quite successful.

*Fever Remittent.* — Forty-five admissions; sixteen deaths. Of these one died on the first day, three on the second, one the third, one the fourth, two the fifth, two the sixth, one on the eight, two on the ninth, one the thirteenth, and one the twenty-fifth. Several of these cases were people brought from off the public roads by the Police. In most of them the head, stomach, liver, or chest were more or less affected.

The treatment pursued was blood-letting, general and local, according to the urgency of the symptoms, purgatives and enemas, nauseating doses of tart. of antimony and ipecacuan., mercurial and saline diaphoretics, blisters, cold lotions to the head, and sponging, tonics of bark, quinine and wine, as soon as they could with propriety be administered.

*Intermittent Fevers.* — One hundred and ninety-two admissions, five of which terminated in death. These had long suffered from the disease, which was complicated with organic affection of the liver, lungs, spleen, or bowels. They had been dissipated or were affected with syphilis.

The treatment consisted in the administration of emetics, saline diaphoretics in pyrexia, and bark or quinine during apyrexia; leeches and blisters were also sometimes employed. And when the spleen alone was enlarged, spleen mixture was found a very valuable remedy and was much used.

| | | Admitted. | Died. |
|---|---|---|---|
| *Hepatic Affections.* | Acute..... | 15 ... | 4 |
| | Chronic ..... | 17 ... | 8 |

Two of the cases were complicated with jaundice; four terminated in abscess or diseased bowels. The chronic generally ended in abscess. In the acute cases the treatment consisted of general and topical blood-letting; mercurial and saline purgatives, mercury so as to affect the system, and blisters, and after the acute symptoms had subsided, mild tonics and moderate diet were allowed. In the chronic cases topical bleeding, blisters, rubefacients, laxatives, mercurial alteratives, blisters and attention to diet.

*Inflammations External.*

| | 39 Admitted. | Died 3. |
|---|---|---|
| Abscess of the Hand..... | 2 | ... |
| ———„——— of the Legs..... | 2 | ... |
| Bubo Simple..... | 3 | ... |
| Cynanche Parotidea..... | 2 | ... |
| Erysipelas..... | 1 | ... |
| Erythema..... | 1 | ... |
| Furunculus..... | 7 | ... |
| Inflamed Arm..... | 2 | ... |
| ——„—— Foot..... | 1 | ... |
| ——„—— Knee-joint..... | 8 | 1 |

| | | |
|---|---|---|
| Inflamed Jaw | 1 | |
| ——,,—— Scrotum | 4 | 1 |
| ——,,—— Testicle | 2 | |
| Inflamed Thigh | 1 | 1 |
| Phlegmon | 2 | |
| | 39 | 3 |

Of the fatal cases one was from sloughing of the scrotum; one from suppuration and disease of the knee-joint, and the third from extensive suppuration below the fascia lata of the thigh, extending up from above the knee to the trochanter major. The adhesive inflammation was not excited, nor the cavity of the cyst destroyed in consequence of disease of the thigh-bone, pieces of which once or twice exfoliated. The result was the frequent collection and discharge of vast quantities of pus under which the patient sunk and died. In all the three cases suppuration was established before admission. The treatment consisted of rollers regularly applied, poultices, fomentations, anodynes, tonics, wine and generous diet.

In the successful cases, general and topical blood-lettings were had recourse to, and poultices, cold and warm lotions, blisters, fomentations, diaphoretics, mercurials, &c.

*Cephalic Inflammations.*—There were five admitted, and one death from inflammation of the membranes of the brain in a Portuguese. This case of meningitis is rather singular, as supervening suddenly during quotidian fever. The latter was of a very intense character, but regular in its periods of accession. These accessions, previous to admission and for some days afterwards regularly recurred in the afternoon. After free purgation, bark and quinine were resorted to but did not succeed in checking the disease. Headache, of which he had more or less complained, during the hot stage becoming more severe, the tonics were abandoned, and as venous congestion seemed to have occurred, he was bled from the arm and mercurial combined with saline purgatives administered, together with antimonials, and leeching to the temples. These measures seemed to afford some benefit, when about the seventh day, the patient became suddenly insensible, and stertorous breathing followed with contraction and perfect insensibility of the pupils. Blood was again immediately drawn from the arm, drastic vegetable purgatives and enemata given. Cold to the head, and mercurial frictions were used without success, and he died on the third day after the commencement of the attack.

A post mortem examination disclosed the existence of violent inflammation of the meninges of the brain with excessive serous effusion between the piamater and brain. This and the arachnoid were raised from the brain, much thickened in structure and easily separated from each other by the fingers. The effusion, extended into the spinal canal from which, when depressed, fluid oozed copiously into the base of the skull. The surface of the brain was softer than usual. The lateral ventricles did not contain more than the usual quantity of fluid. The two successful cases were both of phrenitis cured by blood-letting, both general and local. Purgatives, calomel combined with antimonials, and diaphoretics.

*Thoracic Inflammations.* — Fifty admitted. Pneumonia 20; Bronchitis 20; Catarrh 2; Pleuritis 7; Carditis 1. Of these died of Pneumonia 13 within twenty-four hours after admission; two died after two days, five after three days, one after four, one after five, one after eighteen, and one after twenty-seven days.

From bronchitis three casualties occurred. In four days one, in fifteen days one; in twenty-one days one. Of pleuritis only one fatal case which took place on the fourth day after admission. Of carditis one died in the third month. Two of those included as pneumonia died of diseased heart. The case of the first, Seedee Joyee, is appended. The other patient had all the symptoms of severe rheumatism, but a post mortem examination disclosed the heart to be enormously enlarged and to have been the cause of death. The case borne carditis was in a Purwaree, a discharged sepoy, who had long suffered from the disease and who was repeatedly relieved from acute or subacute attacks by bleeding general and topical, blisters, antimonial nauseants, hydriodas potassæ, and digitalis; but he ultimately sunk. After death the heart was found enlarged and hypertrophied with adhesions of the pericardium to the heart's surface.

General Treatment. — Blood-letting, general and topical, blisters and rubefacients, purgatives, tartarized antimony in large doses. Expectorants, and when the more urgent symptoms subsided, calomel in small doses combined with ipecacuan. James' powder, camphor, extract conii or ganja. The latter in doses from one to four grains seems to be a most useful adjuvant in procuring rest in cases where the nervous and vascular systems are irritable and excited. Ultimately, bitter tonics of quinine or gentian were given.

*Abdominal.* — Three admitted; all peritonitis; no deaths. The usual treatment was adopted.

*Ophthalmic Affections.*—Acute thirteen admitted of various forms and many of great severity. The usual antiphlogistic treatment was pursued during the inflammatory stages, followed by caustic and anodyne remedies.

*Ophthalmic Inflammations, chronic.*—Twenty-eight of various forms of the disease were admitted. All successfully treated.

*Rheumatism.* — Two hundred and forty-two admitted and fifteen casualties. The latter occurred in worn out and broken down constitutions. Organic disease of the liver or lungs and diarrhœa were generally the sequence of the primary disease and cut off the patients. In addition to the common routine of remedies the extract of hemp or ganja, was used with good effect in mitigating pain when very severe, and relieving the nervous irritability without any of the unpleasant results arising from opium.

*Spleen Diseases.* — Eight admissions all successfully treated. In one case the spleen was enormously enlarged. This viscus is connected, in a remarkable manner, with the stomach by the vasa brevia, adhesions and ulcerations may have gradually taken place between the two organs, as the patient was suddenly seized with severe vomiting of dark grumous, clotted blood, mixed with shreds of coagulated lymph. This pulpy substance seemed to be the dissolved spleen and was brought up to the extent of several pounds, after which the viscus was suddenly reduced to its natural size, and the patient left the hospital convalescent. This is supposed to be the only instance known in this part of India, of diseased spleen bursting into the stomach.

*Syphilitic Affections.* — Primary, one hundred and eighty admissions, seven deaths, chiefly among females from sloughing of the genitals, presenting a most disgusting state of disease. A few males died from a complete breaking up of the constitution.

The general treatment consisted of purgatives, alterative mercurials, hydriodate of potash, lotions of the nitrate of silver, or sulphate of copper, or zinc. In the extreme cases, cordials of ammonia, camphor, opium, quinine or bark, and wine were administered with the application of turpentine oil alone, or diluted, cataplasms, nourishing diet, and when diarrhœa supervened, astringents were used.

*Small Pox.* — One admitted; one cured.

*Scurvy.* — Fifty-six admitted; three deaths, occurring in individuals who were in an extreme state of debility with diarrhœa. Two were receiv-

ed from the Bazar and one from the harbour, an Arab. Several severe cases from Aden, all recovered.

The treatment consisted of nourishing diet and vegetables. The vegetable acids and the following draught given three or four times daily.

R. Pulv: cinchon: ʒi Lime juice ʒiv arrack and syrup *a a* ʒss Tinct opii vel Tinct. Mur. Morphiæ ℥ss ℥i m.

This plan was found very effectual. In some cases where the stomach was irritable, quinine was substituted for the bark, and when fever was present, which was generally the case in the afternoon, saline diaphoretics were used, and when the limbs or joints were painful, a few leeches repeated when necessary, and frictions with anodyne stimulating liniments to the stiff and painful limbs. Fomentations and tepid baths were also employed.

| Ulcers | Admitted | Died |
|---|---|---|
| Scorbutic | 16 | |
| Simple | 79 | 2 |
| Sloughing | 11 | 7 |
| Irritable | 3 | |

One hundred and nine admitted, nine deaths, all occurring in subjects where the disease had become incurable from the state of the general habit, or from the parts becoming so much involved as to prevent amputation. At an earlier stage of the disease when operations might have been performed with success, the patients could not be persuaded to submit. In some of the cases diarrhœa supervened and carried off the patients. One of these sufferers, an old man, was admitted from the Dhurumsalla. Extensive ulceration of one foot existed with induration and discoloration, the consequence of a leprous diathesis; purging ensued and destroyed the patient. Another individual, having extensive sloughing of the foot and loss of the toes accompanied with necrosis of the tarsal and metatarsal bones, consented to amputation, but on the table, his courage failing him, he was removed. Scurvy of a most severe character, in this case, supervened, resisting all the remedies, and notwithstanding the greatest attention the patient died, after enduring the greatest suffering, in ten days after the septic symptoms appeared.

The treatment in the severe cases, consisted of warm turpentine and resinous dressings, creosote and cataplasms, lotions, &c. anodynes, cordials of wine, ammonia, camphor, &c. Vegetable diet, quinine, bark, acid, and gentian were also employed and astringents. The chlorides of lime and soda were found highly useful in correcting the fœtor from these ulcers.

In all the scorbutic ulcer cases the antiseptic tonic draught, and gene-

ral treatment referred to in scurvy, were found the most useful means for improving the general constitution, and indirectly, the ulcers.

*Wounds.* — Contused one hundred and sixty-one admitted; incised, and lacerated forty-three, punctured four; Total two hundred and eight. Discharged from these two hundred. Died eight. The casualties were almost all cases requiring judicial investigation, and several of them not devoid of interest. In the middle of the night of the 19th of April a young Brahmin was brought to Hospital. From jealousy an assassin plunged a sharp pointed creese, while his victim lay on his belly, close to the right side of the spine below the eighth rib, completely dividing the ninth, and forming a long punctured wound in the inferior lobe of the lung. In this case it was remarkable to observe the beneficial effect of repeated blood-letting. The intense feeling of suffocation was always relieved by it, and life prolonged for several days.

*Other Diseases.* — Under this head a number of diseases are arranged, amounting altogether to one hundred and sixty-eight. Of these twenty-seven died. Among the latter were some cases of gangrene. One was a woman, who while coming from the Bazar, fell down and broke a bottle of oil which she was carrying. One of the pieces of glass divided the radial artery. In vain the natives attempted, by every means in their power, to restrain hemorrhage, and as a last resource, bandages were tied as tightly as possible round the arm. Enormous swelling and mortification ensued, extending nearly up to the shoulder. The limb was removed on the 10th September, but it was too late; the irritative fever continued and destroyed the patient.

In another case, a most horrible object, was taken out of a ditch, left there no doubt to perish; sphacelus of the penis; involving the whole of the scrotum had taken place; the parts were a perfectly soft gangrenous mass. The patient was pulseless and almost lifeless. The mortified parts were immediately removed; the natural passage of the urethra was discovered and the accumulated urine drawn off. Yet notwithstanding the most assiduous employment of ammonia and the diffusible stimuli, the powers of life could not be restored.

The number of amputations has been considerable, but have been performed in cases which almost precluded much hope of success. Owing to the prejudices of the natives they seldom consent to undergo an operation, until the powers of the constitution are almost exhausted from the local disease, and the blood has become quite corrupted. One case of amputation, performed under these adverse circumstances at the shoulder joint,

proved quite successful. Under the head of "strangulated Hernia" an equally satisfactory termination under similar disadvantages followed. The patient was sent to the Hospital after the failure of all the means of relief employed. The sufferings were intense: the pain as if a cord were tied tightly round the upper part of the bowel, was acute, accompanied with rejection of feculent matter from the stomach. Previous to admission, reduction, by the taxis, had been attempted in vain, and again tried in Hospital and to render it successful tobacco enemata, large bleeding, the warm bath, &c. were employed. At last the patient consented to an operation, the stricture was removed, and the strangulated portion of the bowel found highly inflamed. Owing, however, to the unmanageable character of the man, a stout lascar, and the violent struggles that he made, a great quantity of the bowel was protruded. The whole was at length reduced, and the patient, in a few months completely recovered. Under this head is also ranked, *Poisoning*. Twenty-eight cases have been admitted. These have come into Hospital frequently in a short space of time, thus conveying an impression that the poisoning was systematically carried on by a gang of thieves, who reduce their victims to a state of insensibility, and then rob them. The poison chiefly used is the datura stramonii, the seeds are powdered and given in sweetmeats or in the curry of the natives.

The patients after recovery generally give the following account. That they had been invited to partake of sweetmeats by a stranger on the streets, which after they had eaten, insensibility followed, when they believed they were plundered. The symptoms have been already described in other reports. The patients go through a number of ridiculous gesticulations, and are constantly rising up and sitting down. Strong emetics, the stomach pump, and the use of douches, constituted the treatment.

Under the Head *Tetanus* three cases have occurred. On this disease much conjectural matter might be written, and some endeavours made to point out the intimate connection of the neuroses, but the pathology of this class is still so very obscure that facts can only be admitted in an Hospital Report.

Allusion, however, may be permitted to the remedies. The extract of hemp has been found highly beneficial in tetanus, and more or less so in abating and soothing the severity of the symptoms in all the class of spasmodic diseases, whether affecting the animal, natural or vital functions. Dr. William O'Shaughnessy has perhaps recommended this remedy in too flattering terms in tetanus. It has been extensively used in this disease in the Native General Hospital, and for the mode and results of its employment, reference must be made to cases published in the Bombay Medical

and Physical Society's Transactions. * It will most likely be again brought to the notice of the Superintending Surgeon in future reports, so as to assign its proper place in the materia medica.

In conclusion it may not be irrelevant to observe that nineteen cases of Inquest have occurred at the Native General Hospital, all affording much grave matter for remark, but to which attention cannot now be directed.

* No. iv.

## Article III.

### *Annual Medical Report of H. M. 2d or Queen's Royal Regiment, from the 1st of April, 1841, to the 31st of March, 1842.* By R. H. A. Hunter, Esq.

Presented, August 1842.

Station, Deesa. — Lat. 24° 12′, Long. 72° 25′ East. Height above the level of the sea, under two hundred feet. Distance from the sea, one hundred and twenty miles North-East: no hills intervening. Winds variable at all seasons, but in the cold months chiefly from the North and West. In the hot, South and South-West, occasionally with volumes of dust. In the rains, Southerly. Rainy season from the middle of June to the end of September. Average annual fall, eight to twelve inches. The past season was unusually wet.

Thermometer's highest diurnal range in April, May, and beginning of June, 92° to 101°. Lowest at 6 A. M., 74° to 89°. Highest in July, August and September, 80° to 96°. Lowest at 6 A. M., 75° to 85°. In October, 83° to 92°, and 65° to 79°. In November, December and January, highest 69° to 88°. Lowest, 49° to 78°. February, 62° to 87° (from the 12th to 20th extremely low) and 49° to 66°.

The cantonment at Deesa, three miles from the village of that name, is situated upon two or three pretty regular elevated ridges on the left bank of the Bunass river, that allotted to the 2d or Queen's Royal being the farthest removed and the highest, upon a vast, arid, semi-desert looking plain, bounded to the North-East by an irregular chain of mountains, of which a few low and detached, approach within six or eight miles of the cantonment. This is during the hot season, for in a favorable year in the rains, the whole face of the country presents a rich verdure of pasture and grain, interspersed round the different villages with clumps of high trees.

There are no jungles of moment in the immediate vicinity, but plenty all round, nearly at a distance of from three to six miles. In these as indeed every where uncultivated, the grass shoots up very rank during the monsoon, even on what in the hot weather seemed little better than burn-

ing sand. Very little of this is cut, so that towards the end of the year it becomes trodden down, withers and decays, and finally mixes with the soil.

The soil is a light colored mud naturally and deep, but where much cultivated, partakes more or a less of a darker hue. The river at present scarcely deserves the name, though once I believe a tolerable stream during the rainy season. In its bed are several swamps, with mud, rushes and long grass, but they are two insignificant, perhaps, and far removed materially to affect the salubrity of the cantonment.

The *Barracks* occupied at Deesa by the 2d or Queen's Royal, about a mile South-East of the river and forty feet or so above its level, consist of ten substantially brick-built and tiled long rooms, detached in two parallel lines facing the South-West. Two of these, new ones, are each 180 feet in length, the others 156 by 23½ in breadth, and 14½ in height of walls, exclusive of two small rooms, nine feet by nine walled off at either end. There are small rooms also walled off, the corners of the verandas for Serjeants &c. a little detached to the left, three parallel rows of tiled huts contiguous for the married people, in all about forty of them.

The long rooms have front and rear verandas, and are well ventilated by the doors, windows, and large oblong openings in the roof, surmounted with wooden tops, rendered waterproof by tarpaulin.

Upon the whole, the barracks are well adapted for the accommodation of 800 or 900 men, but for the present strength of the regiment, in a climate of this kind, where little aid is afforded to the ventilation from difference of temperature without and within the Barracks, they are too small. This in the hot weather, however, is in some measure obviated by part sleeping outside under tents, of which two rows without walls are pitched immediately in front.

The *Hospital* is also a very substantial building of the same material as the Barracks, but much too small for the present strength. It has four wards fifty-five feet by twenty-five, and two twenty-five feet square, all in one line with a veranda in front and rear, nine feet in breadth. The front veranda is built in, and having numerous venetians and glass windows, is generally used for convalescent wards. With iron bedsteads the body of of the Hospital might accommodate one hundred patients, but with the present clumsy wooden ones seventy or eighty render it very crowded.

Water is abundant at all seasons from wells at a depth of from sixty to eighty feet, and of a quality very superior. There is a well within the Hospital inclosure, and three between the Barrack rooms, all wrought by means of bullocks.

*Diet and Rations.* — No salt provisions are used, there being always plenty of beef or mutton in the market, though the former perhaps is of inferior quality. Vegetables however are scarce, but more on account of the expense of raising the water for irrigation, than from the climate or soil. All kinds of European vegetables grow very luxuriantly in the cold season, and even potatoes if care be taken to procure good seed. These last, however, are generally small, and only to be had from January to June.

*Duty and Employment.* — The duties have been comparatively light amounting to little more than Regimental Guards, Parades, and Drills, and therefore can have had little extraordinary influence over the health of the corps. The Light Infantry drills in the cold season, however, generally send a number of the old soldiers into Hospital, with stitches, pains in the chest and shortness of breath, which arises from few of the class being altogether free from some degree of chronic bronchial lesion, or "broken wind." (These constitute the greater portion under "catarrh" in the return: common catarrh is very rare.)

*Intemperance.* — With regard to this, it is sufficient to say there has not been a case of "Delirium Tremens," the best criterion, with Head Quarters during the year. One invalid, however, died of it in Colaba, Bombay.

*Average Strength.*—The average strength at Head Quarters has been 893; and the deaths 17, but as we ought perhaps to add the invalids sent down to Bombay, in the end of October, with diseases which may be supposed to have been contracted at Deesa, the average will be 918 and the deaths 25, exclusive of two invalids for epilepsy, one of whom was drowned on the way down whilst bathing, and the other "found dead," at the Presidency.

But if we include a detachment of recruits at Bombay during the rains, the average strength in the country will have been 966, and the deaths 33, exclusive of the two invalids already noticed.

Invalids, 50 left this for the Presidency, of whom ultimately embarked for England 28. Two were pensioned in the country, and the rest are either dead, or have returned to Head Quarters.

REMARKS AS TO THE PRINCIPAL CLASSES OF DISEASES, &c.— On a reference to the return of admissions and deaths, section IX, it will be observed by far the greater portion of the sickness and mortality has

been occasioned by fever and its sequels, and that chiefly of the gastro-enteric and gastro-hepatic species or autumnal remittent, which though not of a fatal character was very prevalent last year, owing, it was supposed, to the unusual wetness of the South-West monsoon. It is true, a very great proportion of the deaths occurred in December, but this we attribute to the sudden setting in of the cold season, urging on the hepatic complications to abscess, and the gastro-enteric to dysentery, as we have elsewhere remarked, the change being equal to that from a hot to a cold climate. Relapses had been extremely frequent in October and November, and almost all the fatal cases were of that description.

The cerebral fever of the hot season was much milder however last year, which may in a great measure be attributed to the comparatively moderate temperature, six to eight degrees below that of the preceding, and the cleaner state of the Barracks and their vicinity, for it must be remembered, in 1840, these lines had been lying waste for nearly eighteen months previously, and that the mortality occurred soon after the arrival of the Regiment. Nevertheless we had a few very threatening cases in the beginning of June just before the rains commenced, one patient indeed lay comatose for several hours during the first or second exacerbation. One also became comatose in November, within the first twenty-four hours, and died the following night, but on the post mortem examination, the only local affection found was an intense gastro-enteritis with the caecal valve very much resembling the everted eyelids in acute purulent ophthalmia. A similar case occurred in March 1841, but in this the patient lingered upwards of a fortnight, comatose. Nothing very remarkable was observed in the brain, but the caecal valve was thick, fleshy and ulcerated, and there was a large ulcer in the stomach nearly penetrating. One died of of gastro-catarrhal fever in April, and almost universal bronchitis and several ulcers at the extremity of the ileum, and one in May, of similar origin coupled with gangrene of the lower left lobe of the lung. This last had been long in hospital, and was greatly reduced.

In December, we had two or three cases complicated with pneumonia of a lower lobe, and another proved fatal, gastro-hepatic, accompanied with purulent infiltration of the upper right lobe. This month also the hepatic and dysenteric were much mingled, at least the fatal cases, ulceration of the intestines more or less general, and abscess of the liver conjoined, in almost every one of them.

Of pure dysentery or colitis, at least in a severe form, we have scarcely had an instance. One fatal case in October, in an old soldier, was evi-

dently accompanied with hepatic disease, the others occurred at all seasons indifferently and may possibly have been of febrile origin.

One admitted in September, under enteritis, from the acute pain and tenderness in right iliac region, turned out a case of psoas abscess, of which the patient ultimately died, in December. The abscess was found to extend from near the trochanter minor to within the thorax, but behind the pleura. The transverse processes of the vertebræ and spine of the ilium were extensively corroded, and the sac was lined with a dark colored membrane, which also invested the large vessels, leaving their proper coats underneath healthy.

The bellies of the psoas and iliac muscles had disappeared, and the abscess was nearly bursting posteriorly through the lumbar region. The sac, colon and ileum, were firmly adhering anteriorly, with thickening and matting of the peritoneum.

*Consumption.* — The two fatal cases of this had been in Hospital the greater part of the year, and were in consequence invalided. Both were old soldiers. They died soon after their arrival at the Presidency. The other of pulmonic disease as per returns, was a sequel of fever.

*Brain, Diseases of.* — Of the death under cerebral disease, one was an invalid for idiocy. He had two or three paroxysms of tertian ague before leaving Deesa, followed by purpura, and died near Cambay. Another invalid died of delirium tremens at the Presidency, and the third was a case of apoplexy or coup de soleil at Colaba, of the recruits there during the rains.

Here too ought to be noticed the two epileptic invalids already alluded to, who died out of Hospital.

*Cardiac and Aortic Disease.*—Under this head, there has only been one death this year. Another, however, has been invalided, and two have died since; see cases, Section, XI. When we look over the returns for the last two years, we cannot fail to be struck with the diminished mortality by this class of diseases. The cause, however, is sufficiently obvious when we look to the age and period of service of the men now in the corps, and the comparatively light duty. It was no doubt the frequent and protracted Brigade drills at Poona, aided by the still faulty dress, which rendered these diseases so remarkably fatal at that station, and for some years afterwards.

Having now given a general outline of the diseases of the past year, we may enter a little more minutely into the nature of the *fevers*, the princi-

pal class, with a view to elicit something relative to the most successful practice or mode of treatment, and in doing so shall contemplate them under three grand divisions, taken from the more prominent symptoms and the season of the year, at which they more particularly prevail. Not that we consider them, distinct species. On the contrary we conceive them to be essentially one, and the grand cause "Malaria," the same in all; the season of the year and particularly predispositions only creating variety.

The first we shall call the *cerebral*. It is that more peculiar to the termination of the hot season. It commenced last year, on the 22nd of May, and though once or twice partially checked, apparently by a reduction of temperature immediately succeeding to heavy dust storms, upon the whole increased in frequency and severity, till rather abruptly put a stop to by the setting in of the rains, about the 16th of June.

This fever generally of a remitting or distinctly intermitting type, was characterized in the hot stage, by flushing redness and heaviness of the eyes, in some cases from the first with a degree of stupor, intense burning heat of skin, with an earnest desire for the cold affusion, and violent headache occasionally in a few hours gliding into coma or apoplexy. Never having witnessed a fatal case of this fever at Deesa, having been absent with the 17th Regiment, when it was so fatal in the Queen's Royal in 1840, my remarks as to its nature are chiefly founded upon its symptoms.* There may be gastric complications also, or these may be the primary and the cerebral symptoms merely secondary, from the predisposition given by a high temperature. Indeed this was the case in two fatal instances similar apparently, but at a different season of the year, and this in the treatment has been kept steadily in view.

In this fever I believe the best practice to be a moderate venesection on admission, 12 to 24 ozs., according to the "tolerance," age and constitution of the patient. Large bleedings I conceive to be positively injurious in all the fevers of Deesa, by creating or increasing the congestions. A purgative of calomel and pulv. jalap. c., to which I add pulv. ipecacuan. grain i. in lieu of antimonial or James' powder on account of the gastric complications, and afterwards a plain solution of the sulphate of magnesia. Leeches to the temples or head generally, cold affusion, cold sponging, cool drinks, saline mixture with nitrate of potass or small doses of Seidlitz every two or three hours, &c., and on the first remission sulphate of quinine. Calomel grains iv. or pil. hydrarg. grains x. every night, resuming

* Since writing the above, I have met with a fatal case. Venous congestion in the head, &c. Stomach and bowels *quite* healthy.— June 1842.

the sulph. magnes. during the exacerbations, or the saline mixture or Seidlitz according to circumstances. The quinine, however, is the grand remedy, and it would be surprising, perhaps, if we had the means of comparing the difference of mortality by these fevers before and since the general introduction of this medicine. We generally begin with grains iv. to vi. where the previous exacerbation has been alarming, whatever be the local complication, and direct our remedies to that, totally independent of the quinine.

The second we have called the *gastro-enteric* or autumnal remittent. This commenced with September, a little later than usual at Deesa; reached its acme in the beginning of October, during the first three days of which, 25 cases were admitted; declined rapidly after the 12th of that month, and by the 20th had all but ceased in its primary type form, though relapses and re-admissions of an intermitting type continued frequent for two or three months after.

This fever was usually ushered in with languor and debility, shivering, or alternate flushes and chills, with a feeling of distension, fulness, and tenderness at epigastrium, or in front of one or other cartilaginous border, sometimes with flushing, redness of the eyes, and other cerebral symptoms; coma, convulsion, &c.; skin hot; bowels confined or relaxed; pulse 120 to 130 or upwards; tongue pretty clean and moist, but in the bad cases more often covered with a white frothy slime. The greater number were admitted at some period of the day or towards evening in the hot stage. Next morning there was a more or less perfect remission, followed, at from 9 to 11 A. M., by exacerbation, and again towards evening by remission. The local or gastro-enteric symptoms also remitted more or less perfectly. Sometimes, more particularly latterly, these exacerbated without the fever in the form of acute pain and tenderness or diarrhœa.

In these fevers it is absolutely necessary to have constant recourse to the physical signs, otherwise the gastritis is almost certain to be mistaken for pulmonary disease. Whether it is from the pain caused by the depression of the diaphragm, I know not, but they refer the seat of it to their chest, which taken with the dyspnœa or panting is sure to mislead. And the enteritis for hepatitis or splenitis. Here they complain of the side, whereas on examination it is found to be in front of that, and that the part on percussion sounds "plus gastric." A clear tympanitic sound may generally also be elicited over all the left hypochondrium, and along in front of right cartilaginous border, whilst from the sixth rib upwards it is distinctly thoracic. In the cold season however, hepatitis is apt to supervene, but I have found only one case of enlarged spleen, and that was

in a recruit who had the fever repeatedly also in Bombay and on the march up.

In the treatment of this fever, we find the tolerance of venesection, the patient sitting up in bed, scarcely exceeds 8 or 10 ozs., except in such cases as are complicated with cerebral symptoms, when 16 to 20 ozs., may be abstracted before any tendency to deliquium is evinced. In all, except the last, we are persuaded venesection is injurious, yet these cerebral symptoms are so insidious during the first or second exacerbation that we question whether it is not the safer rule to bleed in every case on admission, to the extent of the tolerance, and particularly with young soldiers of a full habit. Nevertheless it must be admitted, the greater proportion of the deaths by hepatic abscess and dysentery as sequels, have occurred where antiphlogistics, and more particularly bleeding, have been most freely employed, making every allowance during the last year, not less than as $2\frac{1}{2}$ or 3 to 1.

Comparing the same classes during the autumnal months, we find the proportional number of days in Hospital to have been as $11\frac{1}{2}$ (former) to $9\frac{1}{2}$, but the relapses nearly equal, except in October, when they were also much in favor of the very moderately antiphlogistic nearly as 2 to 1. The only fatal case of fever however, properly as fever, was of the latter class, delirium rapidly followed by coma, convulsion, and death: the complication, an intense gastro-enteritis. We ought especially to be on our guard in this fever when delirium supervenes at an early stage. Free leeching, cold affusion, &c. can alone save our patient from coma or convulsion. The last by itself is perhaps not very dangerous, but when preceded by coma the case is almost hopeless.

Blisters too we conceive to be highly dangerous when there is any tendency to abscess of the liver. Moderate leeching in these cases, fomentations, &c.; in fact a soothing method of treatment, is by far the best.

The third variety we have elsewhere called the *enteric* but it might be as well characterized perhaps as being of a distinctly intermitting type, and appears to be a continuation or relapse of the autumnal remittent. In our statistical review of last year, we said hepatic complications were rare compared with Belgaum, a similar climate in the cold season. The cause of this unusual proneness to abscess of the liver I know not, but certainly that, with gastro-enteritis or dysentery, as sequels of fever, has been the most fatal of all diseases. We have had no marked case of primary hepatitis however, and comparatively few of dysentery. Neither have we had any fatal case, of fever simply as fever, except one on the 1st of April belonging to last year rather, and one in November, and even these may

be said to have proved fatal solely through their complications. In all the others the fever had been overcome a considerable time before death.

With regard to the treatment of this variety, we have little to add to what we have already advanced. Being of an intermitting type, and generally complicated with enteritis, it requires like the last a moderately antiphlogistic soothing mode of treatment, and quinine. In these sequels we have found quinine and opium, with other remedies according to circumstances, of the most marked benefit.

Here the same necessity exists of taking care not to confound gastro-enteric disease with pulmonic, and more particularly as we have seen, a few cases, in the cold season, are liable to be complicated with a partial pneumonia.

No. 1.—*Return of Admitted, Died and Invalided, of H. M. 2d or Queen's Royal Regiment, from the* 1*st of April* 1841, *to the* 31*st of March* 1842.

| Diseases. Strength, 966. | Admitted. | Died. | Invalided. |
|---|---|---|---|
| Fevers (not Eruptive) | 688 | 10 | " |
| Diseases of the Lungs | 131 | 3 | 3 |
| ——— of the Liver | 16 | 3 | " |
| ——— of the Stomach and Bowels | 398 | 13 | 3 |
| ——— of the Brain | 42 | 3 | 6 |
| Dropsies | 6 | " | " |
| Rheumatic Affections | 93 | " | 2 |
| Venereal | 152 | " | " |
| Abscesses and Ulcers | 112 | " | " |
| Wounds and Injuries | 131 | " | 3 |
| Punished | 11 | " | " |
| Diseases of the Eyes | 32 | " | " |
| ——— of the Skin | 41 | " | " |
| All other Diseases | 116 | 1 | 11 |
| Total | 1969 | 33 | 28 |

No. 2.—*Monthly Abstract of Admissions under Fever, and of Deaths, under that and its sequels, at Head Quarters, Deesa. Strength* 893. (*Corrected.*)

| Fevers. | April. | May. | June. | July. | August. | September. | October. | November. | December. | January. | February. | March. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Intermitting Fevers | " | " | " | " | " | 3 | 11 | 17 | 27 | " | " | " |
| Remitting and Continued | 17 | 30 | 91 | 28 | 34 | " | " | " | " | 20 | 21 | 27 |
| | " | " | " | " | " | 63 | 132 | 47 | 25 | " | " | " |
| Total | 17 | 30 | 91 | 28 | 34 | 66 | 143 | 64 | * 52 | 20 | 21 | 27 |
| Of these Re-admissions | " | " | " | " | " | " | 21 | 41 | 22 | " | " | " |
| Deaths (Fevers and Sequels | 3 | 1 | " | " | " | " | 1 | 1 | 8 | " | " | " |

* A Detachment of Recruits joined on the 6th December, many of whom had Fever.

No. 3.—*Abstract of Deaths at Head Quarters, from Fever and its sequels, shewing the specific complications of each, with the results of post mortem examination.*

| Disease. | Died. | Complications. | | Autopsical Results. |
|---|---|---|---|---|
| | " | Gastro-Enteric . . . | 1 | Inflammation of stomach and bowels ; died in 36 hours. |
| Fever. | " | Gastro-Hepatic. . . | 5 | Ulceration of bowels and hepatic abscess in all. In one purulent infiltration, *lung*. |
| | 14 | Gastro-Catarrhal . . | 2 | Ulceration of bowels ; one gangrene, lung ; one bronchitis. |
| Sequels. | " | Enteric . . . . . | 4 | Ulceration of bowels; one with peritonitis. |
| | " | Hepatic . . . . . | 1 | Hepatic abscess ; bowels not examined. |
| | " | Purpura & Gangrene. | 1 | Purpura and Gangrenous sores. |

To shew whether the sickness and mortality has most affected young soldiers or those advanced in life, the long resident or newly arrived, the remaining tables have been framed. The high ratio of mortality amongst recruits of the first year is very striking, and that it is not accidental we have proved by collecting all who came out originally with the Regiment, together with all those who have joined subsequently as recruits, 2099 in the aggregate, which gives 60.1 per 1000 of strength, instead of 58.8.

It would be wrong however to attribute to non-acclimatization, for it may be sufficiently accounted for, from the first six months residence of the great majority of them having been at Colaba, Bombay, during the rains, and afterwards from many of them having had to march a long way to join their Regiments. Those causes, to our knowledge, have more than doubled the ratio.

No. 4. — *Abstract, shewing the composition of the whole Regiment, classed according to the period they have been in the East Indies, as well as the relative number of Admissions and Deaths of each class.*

| Class. | Strength. | Admitted. | | Died. | |
|---|---|---|---|---|---|
| | | Total Admitted. | Ratio per 1000. | Total Died. | Ratio per 1000. |
| Under 1 Year . . . . | 102 | 203 | 1990 | 6 | 58.8 |
| 1 to 2 Years . . . | 410 | 800 | 1951 | 11 | 26.8 |
| 2 to 3 Years . . . | 150 | 332 | 2213 | 2 | 13.3 |
| 3 to 4 Years . . . | 2 | 1 | 500 | " | " |
| 4 to 5 Years . . . | 17 | 20 | 1176 | " | " |
| 5 to 6 Years . . . | 29 | 47 | 1620 | " | " |
| 6 to 7 Years . . . | 40 | 51 | 1275 | 1 | 25. |
| 7 to 17 Years . . . | 297 | 423 | 1424 | 13 | 43.8 |
| Total . . . | 1047 | 1877* | 1792 | 33 | 31.5 |

* Accidents, &c., not peculiar to climate, not included in this Table.

No. 5. — *Abstract shewing the Diseases by which the mortality has been occasioned, and according as it has occurred in those above or under seven years service.—(Corrected.)*

| | 7 to 17 Years. Strength 297. | | Under 7 Years. Strength, 750. | |
|---|---|---|---|---|
| Died of | Total Died. | Ratio per 1000. | Total Died. | Ratio per 1000. |
| Consumption | 2 | 6.7 | " | " |
| Cardiac Disease | 1 | 3.4 | " | " |
| Fever | 2 | 6.7 | 8 | 10.7 |
| Hepatic (Abscess) | 5 | 16.8 | 3 | 4. |
| Stomach and Bowels | 2 | 6.7 | 7 | 9.3 |
| Brain | 1 | 3.4 | 1 | 1.3 |
| Other Diseases | " | " | 1 | 1.3 |
| Total | 13 | 43.7 | 20 | 26.6 |

We have not given the ages in the last two tables, but if we take that of those who came out with the Regiment at 22 years on their arrival, and that of those who joined subsequently as recruits at 19 or 20, we shall have the ages as near as possible by adding the number of years in the country. The Queen's Royal have scarcely had ten volunteers altogether from other corps.

Though not immediately connected with the present subject, it may be interesting to exhibit the ratio of mortality by the same classes of diseases amongst the Officers, and more especially as our long service with the Regiment will enable us to do so with great correctness.

No. 6. — *Abstract shewing the Diseases by which the mortality amongst the Officers of the 2d or Queen's Royal Regiment, has been occasioned at the various Stations under the Bombay Presidency, from the 1st of June 1831, to the 31st of May 1842.*

| | Died. (Corrected.) | |
|---|---|---|
| Aggregate Strength about 407. | Total Died. | Ratio per 1000. |
| Diseases of the Lungs | " | " |
| —— of the Heart | 2 | 4.9 |
| Fevers | 1 | 2.4 |
| Hepatic (Abscess)* | 7 | 17.2 |
| Stomach and Bowels (Chronic Visceral) | 1 | 2.4 |
| Wounds and Accidents | 6 | 14.7 |
| All other Diseases | 1 | 2.4 |
| Total | 18 | 44. |

* Only one of these a sequel of Fever.

N. B. Only two deaths by disease, under 7 years residence, (Cardiac, &c. Hepatic).

CASES.

No. I. *Consumption.* — Serjeant Thomas Dunlop, ætat. 34. 17 years service; 16 in India. Of a phlegmatic temperament, and moderate frame. States that he generally enjoyed good health till on the late campaign in Affghanistan when he suffered much from pain in the chest, but as all did so more or less from the knapsack and cross belts, he did not give particular heed to it, Was in hospital at Cabul with a small abscess in the vicinity of the rectum. and has had a similar one here not yet healed. Towards the close of last autumn began to suffer from dyspnœa and cough, particularly in the morning.

In October felt something burst in his chest, and immediately after he expectorated about a gill of blood, which at the time afforded so much relief that he did not come to hospital, though the expectoration was tinged for some days after. Has been better and worse since, but almost constantly in hospital since March last, with pain in his chest, dyspnœa and cough, with a copious, thick, white expectoration. Aspect sickly; skin cool; tongue clean; bowels regular; pulse 84; respiration 28 to 30, abdominal. Irregular fever and occasional night sweats

*Physical Signs.* Considerable emaciation. Right subclavian region flattened; left more full and rounded, but deficient in resonance, particularly under 3d, 4th, and 5th, ribs. Respiratory murmur in both subscapular regions, and in right mammary and scapular, tolerably pure. From right clavicle to nipple mixed with sonorous and muco-crepitating rales, nearly choked with them under left clavicle, and lower down only a thin gurgling is audible. No bronchophony or pectoriloquy.

*Diagnosis.* Phthisis Pulmonalis. 28th August 1841. Invalided in September. Died at the depot Colaba, 28th January, 1842.

*Autopsy*, by Assistant Surgeon Dr. Barrington. Nine hours after death. Right lung of a greyish colour interspersed with dark lines, quite free from adhesion, and in every respect healthy. Left adhering to costal pleura, by means of a fleshlike membrane three or four lines in thickness. Excavations in every part, one at the inferior portion capable of containing an orange lined by a smooth semi-cartilaginous membrane, and containing thin purulent fluid. The entire lung studded with tubercles in different stages, and no part of it pervious to the air.

No. 2. — Serjeant Richard Bolter, ætat. 32. 17 years in service; 16 in India. Of phlegmatic temperament, and tall bony frame. Was in hospital at Poona in 1835, with œdema of the feet and ankles and other slight dropsical symptoms, together with an excited action of the heart simulating hypertrophy, but afterwards enjoyed good health, he says (was mounted as provost Serjeant during the whole of late campaign in Scinde and Affghanistan) till November last, when on march up from Cambay to Deesa, with a detachment of recruits he was suddenly seized with hæmoptysis. Expectorated about 2 ozs. in all, but thought it was from his having been over exerting his voice. Did not come to hospital till May last, when he presented himself with his present ailments, dyspnœa and cough, particularly at night or in the recumbent posture, with a pretty free muco-purulent expectoration, sometimes tinged with blood. Skin at present cool; bowels regular; pulse 72, moderate; respiration 18, thoracic. No night sweats or other hectic symptoms.

*Physical Signs.*—Body generally, thin and attenuated; chest narrow; clavi-

cles and upper portion of sternum, prominent ; scapulæ flattened. Deficient resonance in right subclavian region, with high sonorous respiratory murmur; murmur less loud in left subclavian, scapular and axillary regions, but with mucous rale, particularly under 2nd rib anteriorly, where after coughing it becomes thin and subcrepitous or gurgling. Full, softer and pure (semi-puerile) in both mammary and subscapular regions. Bronchophony questionable in right axillary. Heart's sounds and impulse, normal.

*Diagnosis*, Chronic Pulmonary Catarrh of upper lobes. (Phthisical) Deesa, 10th September, 1841. Invalided, September, 1841 Died at Colaba, 16th February, 1842.

*Autopsy* by Assistant Surgeon, Dr. Barrington, 10 hours after death. Body much emaciated, face of a lurid hue. Larynx internally presented a large patch of ulceration, extending from; and implicating the, Glosso-Epiglottidean mucous folds. The rima glottidis, which was more patulous than natural, rigid and uneven. The posterior surface of the thyroid cartilage down to the attachment of the crico thyroid ligament, and the arytenoid cartilage of left side, ulcerated. Mucous lining of trachea and bronchial tubes, vascular. Lungs presented one mass of tubercles in their different stages of development, and an abscess of some size existed at the top of left lung. Ilio-cæcal valve and rectum also presented a few spots of ulceration.

*Remarks.* — Relative to these cases, it will be observed, on a review of the symptoms and physical signs, the diagnosis lay between chronic pulmonary catarrh or bronchitis, and phthisis tubercularis. The fact is, both were present, but with regard to the first case, we inferred also the latter disease from the hectic symptoms. The chief diagnostic in both, however, was the bronchitis being nearly confined to the upper lobes. The gurgling rales might have been in consequence of its complication with dilated tubes. We had not then seen the excellent "Treatise on the diagnosis and treatment of diseases of the chest," by Dr. Stokes of Dublin, or we should have had no difficulty. It was quite evident, they were not ordinary cases of phthisis. But the chief point we would draw attention to in the first case, is the comparative flattening in right subclavian region, the dulness on percussion and tubercular disease in left. Dr. Stokes explains this when he says, in speaking of chronic tubercular development, "these cases too being almost of long duration, dilatation of the air cells often occurs." This we apply of course only to the conformation of the chest, the dulness may be explained by the subsequent disorganization of the lung. With regard to the right having been found quite healthy, we think it will be admitted there was a chronic bronchitis of the upper lobe when the case was taken. There was no dulness in the subclavian region and therefore we may infer there was nothing else at that time. It is curious, however, that it did not afterwards become tubercular. This we certainly expected.

Before dismissing this subject we would advert to a species of tubercular disease by no means rare, particularly amongst young soldiers. It is masked under symptoms of dysentery, and from the frequency of that disease in India is constantly mistaken for it. The dysentery acts as a revulsive, for with care little change will sometimes be observed for a whole year. They are apt to be cut off however, in the rainy season, by diarrhœa or dysentery, under which they are included in the official returns.

*Cardiac and Aortic Disease.*—No. 1.—Private Peter Daly, ætat. 32; 16 years service; 14 in India. Of a choleric temperament, and moderate frame. Has been acting mess Serjeant for the last two years. States that, with the exception of five days last hot season with the fever then prevalent, he has scarcely been in hospital since he came to the country, but that during the last two months he has suffered much from dyspnœa and palpitation on exertion as in running from the mess-house to the gate, from the former to such a degree as to take away for a time the power of speech. In every other respect enjoys the best of health. Face and lips much paler than formerly; skin cool; pulse 120, small, but firm.

*Physical Signs.* Condition inclined to corpulency. Chest well formed, but with a visible tremor in cardiac region. Respiration high, full and sharp. Deficient resonance over lower half of sternum, and left 4th, 5th, and 6th, cartilages, the two latter to line of nipple. Heart's impulse strong and heaving over all the cardiac region, but strongest much at sternal junctions of 4th, and 5th, cartilages or under the sternum. Systolic sound masked by a rather prolonged sawing murmur, sharpest about middle of sternum. Diastolic dull, slight double bellows under upper portion of sternum, but none over the clavicles.

*Diagnosis.* Hypertrophy with dilatation of right ventricle, and probably also of the auricle, moderate hypertrophy with contraction of left. No aortic or valvular disease.

*Prognosis.* Death within six months. Deesa, 27th February, 1841. Died at Colaba, Bombay, 30th April, 1841.

*Autopsy* by Assistant Surgeon Dr. Barrington, 6 hours after death. About two pints of dark coloured fluid on each side of chest. Lungs except a small portion of right lower lobe free of disease, — here there was considerable sanguineous congestion. Pericardium contained a few ounces of limpid serum. The parietes of both ventricles of the heart, but most particularly the left, in a hypertrophous state, with corresponding enlargement of the cavities. The heart weighed 21½ ozs., more than twice the weight of that of a large man. The similunar valves were ossified, the aortic orifice much enlarged, and the ascending portion of the arch dilated to nearly twice the natural size, without apparent disease of the coats, further than a slight puckering of the lining membrane. Liver enlarged, and of an unhealthy brown color. From the serous membranes of the intestines, a dark colored effusion to the amount of three or four pints.

No. 2.—Private Michael Dunovan, ætat. 20. 2 years service; 1 in India. Of a melancholic temperament, and slender frame. Admitted 11th February 1841, complaining of dyspnœa on exertion, as at Light Infantry Drill, palpitation, oppression at chest, and occasionally cough, of some months duration.

Also of a pain in right ear, which he reported to have come on the previous evening on parade, at the time he thought from the awkward pressure of his cap. His skin was cool; pulse 92, comparatively small and indistinct at left wrist. Heart's sounds were extensively audible, and respiratory murmur low and rough, but without rale.

Has been twice bled to the extent of 8 ozs., and has been taking saline and other cathartics, and now feels so well that he wishes to return to his duty; makes no mention of the pain in his ear, but when the pulse rises to 100 or upwards, which it sometimes does during the heat of the day, he experiences an acute throbbing in his forehead and ears. Skin always cool; pulse at present 72, not very well sustained, and comparatively small at left wrist.*

*Physical signs.* Condition healthy. Chest well formed, and without deficiency of resonance, except along 4th left cartilage towards the nipple. Respiration low over all the chest, but on forced respiration markedly highest in left subclavian region, Impulse of heart always plus, moderately when circulation is calm, but strong and abrupt, up and down, when accelerated. Second or diastolic sound loud and large under left clavicle. Very distinct and sharp under right. Systolic not audible under right, and scarcely under left. In cardiac region both are loud and abrupt. No bellows murmurs.

*Diagnosis.* Moderate hypertrophy by increased, extent (of the parietes) of left ventricle. No aortic or valvular disease

*Prognosis.* With care will ultimately do well. Deesa, 3d March, 1841. Died rather suddenly, 5th April, 1842.

*Autopsy.* 6 hours after death. Head, nothing remarkable; heart fully half as large again as closed fist of subject, a little broad at apex, but the right ventricle apparently the broadest and largest. Parietes of left ventricle, at thickest part, 7-8ths of an inch. Right at base, 5-8ths or 6-8ths but elsewhere not more than 2-8ths or 3-8ths. Muscular cords strongly developed. A good deal of fat upon the organ externally. No other particular morbid appearance.

No. 3. Private William Sulton, ætat. 43; 10 years service, 9 in India. Of a melancholic temperament, and small slender frame. Joined the Regiment, as Master Tailor, but was soon after reduced to the ranks for intemperance. Was through the campaign in Scinde and Affghanistan as a Private, but has again been acting Master Tailor since his return in 1840. Admitted at 4 A. M. of the 8th of May 1842, with great oppression at chest, dyspnœa and a bloody frothy serous expectoration. Had seldom or never been in hospital, but his comrades say he had not been well for a long time previously. Felt very unwell the evening before admission, but as a detachment of recruits was expected next day, did not like to come to hospital. Became suddenly worse at 3 A. M. and died at ½ past 4.

*Autopsy.*—Noon. Frothy serum issuing from the mouth. Lungs rather expanded beyond the bounds of the thoracic cavity, and their tissue gorged with bloody frothy serum, which flowed copiously every where from their cut surface. The parenchyma was not broken down, but in the upper lobes were several irregular hernial like protrusions through the pleura pulmonalis, one or two the size of a walnut, evidently containing fluid held in by a thin transpa-

* The left radial artery divided two inches above the wrist, and only the smallest branch followed the usual course.

rent membrane, which when cut gave exit to a stream of the bloody serum; 6 or 8 ozs., of serum also in either pleural sac.

Heart twice the size of the closed fist of the subject, and apex blunted. Left ventricle at thickest part, one inch in thickness. Right, soft and flabby, 2-8ths to 3-8ths. Base of aorta, thick, irregular and gritty, with calcareous deposition in sub-serous tissue. Semilunar valves and ascending aorta, generally, more or less irregular and cartilaginous. Blood also flowed freely from liver when cut. Deesa, 8th May, 1842.

*Remarks.*—With reference to the first of these cases we may observe the apparent greater hypertrophy of the left ventricle probably in some measure depended on the natural greater thickness of its parietes (nearly as three to one) and hence the necessity in all such cases of exact measurement. The hypertrophy with dilatation of the right ventricle was inferred from the extensive dullness and strength of the impulse under the sternum, together with the degree of dyspnœa on exertion. The hypertrophy with contraction of left, from the impulse in that region and moderate volume of the pulse. "No valvular or aortic disease," probably because we supposed the distress of the respiration and the murmurs indicative of these, were sufficiently accounted for by the disease of the ventricles alone. Compare our former cases, and particularly with the 2d of these. We are strongly inclined to believe also from the rapidity of the pulse, the prolonged sawing was referred to, the systolic *instead* of the diastolic sound in the first instance. This last, as far as our observation goes, is always associated with disease of the base of aorta or valves:—See our cases every where.

None of the above it will be observed, could in any way be traced to rheumatism, the supposed fertile source of these affections. The first would seem to have been brought on by a change of life from activity to luxury and sloth. The second we would ascribe to an originally disproportioned organ, which in ordinary life in a cold climate, might never have been discovered, but which the feeding, the duties and tight dress of a soldier excited to hypertrophy with dilatation. Our prognosis in this was falsified by the result, but as it is difficult to persuade a person to submit to the necessary regimen in this disease, and as he was extremely anxious to return to his duty whenever he got a little well, we were prevailed upon to gratify him, thinking it would at least prove his unfitness and prepare the way, he being a young soldier, for his final discharge from the service. In the cold weather he got on much better than could have been expected, at least, he managed to keep out of hospital, but on the 1st of April he was again admitted and died on the 5th; rather unexpectedly, as he had not been noticed to be worse than formerly. He had been bled that morning

I believe to the extent of twelve or sixteen ounces, and at least, once before for the relief of the palpitation, &c.

The third may be ascribed to a similar cause, at least this man had always a cold badly nourished appearance, though scarcely ever in hospital. He entered the service late in life, and from his previous habits must have felt the knapsack and cross belts very much during the campaign in Scinde and Affghanistan though he did not complain. Had he continued as a private, no doubt he would have been compelled to have to come to hospital at a much earlier period, though from the state of the aorta and valves there is little probability that his life could have been prolonged more than a few months. This combination of cardiac with aortic disease we invariably meet with in old soldiers, indeed after thirty years of age, and in these it runs generally a very rapid course. In the young, particularly under eighteen or twenty, the same degree of disease apparently is borne for years, though of course all tend ultimately to the same result. The above case shows indeed what a state of disease in these organs may exist with little suffering, comparatively, so long as the habits of life are passive.

It would seem also to have demonstrated the proper investing membrane of the lungs, (see autopsy) independent of the pleura, as described by Dr. Stokes of Dublin.

Mrs. Kennedy 2nd or Queen's Royal Regiment, ætat 19. ; 11 months in India. Of a melancholic temperament, and small slender frame. Admitted 9th June 1842, complaining of stuffing and smothering in her chest with palpitation and a catching pain under lower portion of sternum, on inspiration, shooting up to her left shoulder and back of her neck, which she reports to be of only three weeks standing, though she admits she had the beating when in hospital in March last.

States that she always enjoyed good health previously to her arrival in India, and never had any thing the matter with her chest. Had the fever in Bombay last rains, and again the greater part of the way up to Deesa, and very often since. Has since admission been bled three times, in all to thirty-six ounces, and with very great relief.* Can now lie down, which she could not previously. Skin cool ; tongue clean ; bowels active ; pulse 116, quick, and tolerably sustained ; respiration 34, abdominal and thoracic.

*Physical Signs.* General condition tolerable. Very extensive dulness in cardiac region and both sounds of the heart masked by sharp sawing murmurs, most superficial or loud under sternal junction of 4th and 5th left cartilages and under the sternum, the diastolic loudest and much prolonged. Systolic under upper portion of sternum pure and dull. Diastolic still with

* Here we would again urge the necessity of extreme caution in the use of this remedy in these affections, we continually meet with cases simulating organic disease from depletion and fever alone.

sharp sawing murmur. Both pure under left clavicle, not audible under right near the shoulder, and only slight bellows above. Impulse in cardiac region not heaving. Respiration puerile.

*Diagnosis.*—Morbid state of the base of the aorta and valves, the former dilated and cartilaginous; arch healthy. Hypertrophy with dilatation also at least, of left ventricle.

*Prognosis.* Life very uncertain. Death within six months, preceded most probably by Hœmoptysis.

*Remarks.*—This patient is since dead after a very short illness, but whether from this and fever or cholera we do not know. The case is introduced because it is the first we have met with in the female sex, and though there is no post mortem report, because the diagnosis may be considered *substantially* as equally correct, there can only be error in the details; that is, the base of the aorta and not the valves may have been the seat of the disease or vice versa; or the right ventricle may have been affected as well as the left, or in some degree both auricles and ventricles.

To explain, we divide the evidence deducible from the physical signs into three kinds or degrees. In the first, they do not contradict the symptoms merely, and so furnish a negative evidence in their support. In the 2nd, they are positive of their kind, but as they may depend on different diseases, they require the symptoms to compare, whereas in the 3d, to which the above belongs, they are conclusive of themselves. In these, however, we go farther, and attempt to anticipate the Necrological report.

*Aneurism of the Abdominal Aorta.*—Private Charles Floyd, ætat. 43. A gardener, 20 years service, 16 in India. Of a melancholic temperament, and rather slender frame. Admitted 21st August 1842. Complains of pain in epigastric and left hypochondriac regions, with a dead feeling of weight at the pit of the stomach. Skin cool; tongue clean; bowels regular; pulse 72, rather small. States that he first began to suffer from pain across his loins in Scinde in 1839, and from his present ailments soon after his arrival at Deesa in 1840. Was in hospital with the former a short time ago, and frequently of late it appears with "bowel complaints."

*Physical Signs.* Condition rather thin. Resonance of chest, cardiac and hepatic regions, normal. Fulness in epigastrium with circumscribed hardness and fleshy dulness on percussion, evidently from a pulsating tumor (on palpitation) something of the size and shape of a child's head. Friction sound, and a very loud forcible filing, the last synchronous with the pulse, and loudest near the centre and left, a little mesial to left cartilaginous border. Not audible in left hypochondrium, nor any where away from tumor. Strong forcible heaving impulse communicated by the stethoscope from the tumor in all directions.

*Diagnosis.* Aneurism of the abdominal aorta.

*Prognosis,*—Sudden death within three months. Deesa, 1st September, 1842. September 2d.—Complains to-day of pain across the loins. Purring tremor

very perceptible close to left cartilaginous border, where morbid murmur is loudest. Murmur itself double at this part, the first abrupt harsh and rasping or filing, the second filing and musical, but only over a space one or two inches in diameter.

There is also a hard tumor in left ham, the size of an egg which disappears on raising the limb above the level of the body and pressure. This also he first noticed about two years ago. Knows no cause. Has always been a healthy man. Never had rheumatism, venereal, or been salivated.

For the following we are indebted to Dr. Stone, H. M.'s 14th Light Dragoons, in medical charge of H. M.'s depot, Colaba.

December 24th.—Yesterday at 7 P. M., when at the close stool, he felt something in the abdomen give way, followed by a sensation as of boiling lead trickling down towards left thigh, and faintness. Soon became insensible, and died at 10 P. M.

*Autopsy*, 10 A. M.— Head, not examined. Thorax, all the viscera healthy. Abdomen, on laying aside the integuments nothing remarkable was observed. The stomach, bowels, liver and spleen, having been removed, a large bloody membranous mass occupied the left lateral and lumbar regions which on being separated from the aorta, the latter was found expanded all round into a cavity 6 inches by 3 or 4, having its inner membrane thick, white, and irregular, the origin of the cœliac artery about its centre. When separated from the body this cavity presented two solutions of continuity, the one large irregular and ragged, corresponding with the three last dorsal vertebræ which were deeply eroded, the other with the anterior and left lateral aspect of the tumor and nearly opposite to the origin of the cœliac artery. A little bloody serum in the general cavity. Left kidney enveloped in the bloody mass, but not perceptibly reduced in size.

In the left ham was found a tumor the size of a walnut, on rather perhaps a cyst filled with a pale yellow thick gelatinous fluid. This was the tumor in the ham suspected also to have been aneurismal, though we had failed to prove it by means of the stethoscope. The circumstances favoring that view were so strong that we were inclined to distrust the negative evidence afforded by the absence of the usual signs.

We have elsewhere adverted to the difficulty often experienced in detecting aneurismal tumors in the abdominal cavity with certainty, even with the aid of the stethoscope. The above case is an exception however to the latter part of the rule, but this we attribute to the succulated aneurism into which the true seems to have opened in the region of the morbid murmurs and purring tremor. See case, Physical signs.

The cause of this difficulty we ascribe to the dull fleshiness of all the surrounding parts, and the want of a proper rest for the stethoscope, without pressing upon the artery. We have ourselves been deceived both ways where the signs were equivocal, but in a case like the above of course he who ran might read. To the pure symptomatologist however, insuperable difficulties would have presented themselves, which only death and a post mortem examination could have removed. To the symptomatologist and stethoscopist combined, certainty itself could not have been more sure.

*Febris Remittens, Gastro Hepatic and Pulmonary* 1842 May 8th, Private James Cottis, ætat. 21 ; 3 years service ; 2 in India. Of a melancholic tempe-

rament, and rather slender frame. Admitted last evening in the hot stage of fever, accompanied with nausea and acute catching pain at the epigastrium checking his breathing. Skin hot; bowels moved; pulse 130. Epigastrium tender, had a purgative on admission followed by the Solut. Sulph. Magnes. V. S. ad ℥xii. Cont. Solut. *Vesp.* Pil. Hyd. gr. x. c. Opii. gr i. hs. Mist. Salin. c. Nitrat. Potass. 3 qq. hora.

9th.—Acute catching pain in right iliac region with tenderness on percussion. Skin still hot; pulse 96; Hirud. et fotus p. d. Rept. Pil. Hyd. Opii. et meridie habt. Ol. Ricini ℥vi. c Tinct. Opii. m. x. Cont. Mist. Salin.

10th.— Fever all yesterday. Pain now shifted up to right subclavian region; iliac and along in front of cartilaginous border, full and tense, resonance plus gastric. Skin of extremities cool, of body hot. Tongue loaded; bowels open; pulse 100. Had the blue pill and opium again at bed time Ol. Ricini ℥i. c. Tinct. Opii. m. x. Cont. Mist. Salin. c. Nitrat. Potass. Sulph. Quinine gr. ii. 2da qq. hora. *Vespere* Enema domestic. Rept. Pil. Hyd. et Opium.

11th.—Feels easier when lying quiet. Pain now referred to the hypochondrium, with dulness on percussion from cartilaginous border to near the nipple. (Was in hospital last year at this time with hepatitis and dysentery.) Abdomen hot; extremities cool; bowels open; pulse 96. Hirudines et fotus hypochond. Rept. Med. ut heri. (I was now laid up with fever, and did not see him again till) May 19th. Feels quite easy, only weak. Skin pretty cool; tongue covered with a dark moist load; bowels active, pulse 96; hepatic dulness from nipple to an inch in front of cartilaginous border, and from apex of right scapula downwards, with crepitating rales over all that subscapular region, and round superiorly to nipple. No vocal resonance.

23th.—Feels quite easy. Skin cool; pulse 124. Dulness on percussion now extending above the nipple, with a moaning and piping rale for an inch or so above the dull region, in both lateral and mammary, with an occasional crepitating in lower interscapular region. Murmur extinct in subscapular, and sound on percussion quite dead. Blue superficial veins meandering down over the the right hypochondrium, Abdomen tense and semi-tympanitic.

June 1st. — Hypochondrium becoming very full and rounded. Dulness on percussion from 3d rib to two inches in front of cartilaginous border. Skin warm; pulse 108. Respiration puerile in left chest anteriorly. Comparatively low but pure under right clavicle. 5th. Died at 8 A. M.

*Autopsy.* Noon.—The right lobe of the liver and lower lobe of the right lung occupied by an immense abscess filled with a thin greenish matter. The cavity was lined with a cyst, and no traces of vessels were observable except two or three short fleshy looking shreds. The lower lobe of the lung had been completely removed, and the lower part of the middle ulcerated off nearly horizontally across leaving a thin web on the sac anteriorly. Laterally the pleura adhering to the parietes seemed itself to be the sac. Lung for an inch above this, dark red and congested. Cæcal valve and six inches of colon, thickly set with large circular ulcers having thickened edges. Left lobe of liver, straw colored.

*Remarks.* — It would appear that on admission, in addition to the remitting fever at that time very prevalent, there was in this case an old latent enteritis and hepatitis which were roused by it into activity, and

that the removal of the lung by ulceration was the effect of hepatic abscess.

*It* may be thought curious, however, that the abscess should have progressed so far without bursting through the bronchial tubes; but from what we have observed this is really a much more rare occurrence than is generally supposed by non-stethoscopists. We were first led to this by our anxiety to trace a case this way by the anscultatory phenomena. We have seen several take this course, whether from the substance of the liver or beginning between its peritorineal coat and the diaphragm, but not one can we say, that has actually burst through the lung. The muco-purulent discharges mixed with blood which in some cases are copiously expectorated, come from the lungs or bronchial tubes themselves generally from a progessing pneumonia and bronchitis. *

Indeed, comparing these with the contents of the abscess afterwards, is fully demonstrative of this. But we have seen the same in a case of lumber or psoas abscess, which had risen up behind the pleura *without penetrating* it.

We were at a loss at first in the above case on detecting the crepitating rales, &c., to determine whether the disease of the lung, was itself a primary complication, or only consequent upon a hepatic abscess, but the absence of vocal resonance, and afterwards the extinction of the respiratory murmur with the belt of crepitating rales surmounting the dull region, and progressing upwards, were quite conclusive. Dr. Barrow, Queen's Royal, had noticed the anscultatory phenomena the day previous, but having had the whole of the hospital duty at the time on his hands, had not particularly adverted to them.

There would of course have been no difficulty, had we made certain of the state of that portion of the lung on admission. We were only led to it by the ascent of the hepatic dulness, and crepitating rales under the nipple.

Deesa, 23d June, 1842.

*Case of Snake bite.*—M. A. W. ætat. 15. A rather delicate girl, of a melancholic temperament. Admitted last evening having been bitten by a snake supposed to be the common species found there in all the compounds during the monsoon) which she had accidentally trampled upon. There are three dark spots on the outer dorsal aspect of left foot near the instep, which are said to be the wounds made with the teeth and burnt with lunar caustic twenty minutes or so after the accident. The foot and ankle are hard, swelled, and of a pale shining color mixed with livid. Leg and knee also swelled. Has been expectorating small quantities of grumous blood since midnight. Respiratory

* Or do the bronchial membranes take on a vicarious action

murmur pure and equal. Took some coffee this morning which excited vomiting. Seems quite easy and makes no complaint.

*Noon.*—Swelling of leg and knee increased with some increase of temperature; grumous expectoration moderate.

*Evening.*—There has been a slight oozing of blood from the wounds. Leg more swelled. Circulation and temperature generally, moderate. Expectoration still mixed with grumous blood.

24th.—Foot and ankle hard and more livid. Hardness and lividity also of leg. A large livid patch or ecchymosis in ham. Petechial spots and vibices also on arms and hands. The leg, foot, and ham, now exactly resemble purpura or dry scurvy common in Colaba, Bombay. Gums have also been bleeding a little. Makes still little complaint.

*Noon.*— Grumous expectoration still very moderate. A large vibex now near the stomach. Petechiæ on right leg and foot. Former patches increasing in size and darkness. Occasional vomiting.

*Evening.*—No vomiting. Hæmoptysis, trifling. Spots and vibices darker, but swelling and hardness not increased. Several spots about *the right* foot and ankle, and smaller ones on the back of hands and on the forearms. One rather large vibex on left forearm, and an old bruize-like patch on the other. Skin cool; pulse 112.

25th.—Fainted in the night, and is still pale and weak. Ecchymosis on left forearm paler. Two or three petechial spots on the face. Hæmoptysis continues and oozing from the bites. Skin cool; pulse 120. The leg is at present about twice its natural size and of a pale livid color mixed with darker patches about the foot.

*Evening.*—Again great tendency to syncope since 3 P. M. Swelling, &c much as before, pulse 134.

26th.—No hæmoptysis since yesterday, but very thirsty all night, pulse 120. Swelling, vibices, and ecchymosis in ham, darker.

*Evening.*— Ecchymosis in ham still very dark, but leg generally becoming of a straw color. Foot livid, tense and warm. Spots on feet and arms fading. Skin cool; pulse 136, quick and rather hard. 27th. Leg much softer and considerably fallen. Blackness in ham changed into straw color. Leg also and foot straw colored. Spots fading. Those on face gone. Pain over the coronal suture all night. Skin cool; pulse 120. Convalescent.

*N. B.*—This case was assiduously treated by Dr. Jopp, Queen's Royal, with Ammonia, camphor and opium, wine, beer, &c.

## Article IV.

### *Portion of the Annual Report of the 1st Troop Bombay Horse Artillery, embracing the first eleven months of the year* 1841. By A. H. Leith, A. M.

Presented by the Medical Board, June, 1842

From the commencement of the year up to this time the Troop has continued in tents, and it has been subjected to considerable changes of climate. In the beginning of the year we were encamped in the vicinity of Shikarpoor, from thence we marched on the 14th January, and between Khanghur and Munyotee crossed the desert which lies at the southern end of Kuchee; we continued our march by Shahpoor and Chachur to the neighbourhood of Bhag. This small town is on the Naree river, the most considerable of the five streams that water Kuchee, and it is nearly in the middle of the plain, being about thirty miles from the Brahooee mountains, between thirty and forty from those of the Murrees, and about forty miles from the desert which lies to the southward, and the same distance from the hills which bound the plain to the northward. The soil of the plain is for the most part alluvial, there are some spots however, as at Shahpoor, where the alluvium is covered to some depth by silicious sand. In the neighbourhood of water it appears rich, and there, when uncultivated, it is covered with underwood or small trees of acaciæ, zizyphus, capparis, &c. and near the streams tamarisk, asclepias gigantea and oleander abound. Again there are extensive tracts, which from want of water, bear only salsola or capparis, or which are in appearance perfectly bare of vegetation, yet in the midst of such bareness and aridity, flights of pterocles are seen; many such tracts have evident marks of former cultivation and in the midst of them are the remains of villages. The present desolation has been in those cases caused by the supply of water having been diverted to the cultivation of the fields of some more powerful tribe. The soil appears to be impregnated with a considerable quantity of soluble saline matter, for the edges of streams are often incrusted with it, and the water of wells which remain long undrawn, becomes brackish and unfit for use. At Khan-

ghur, on the edge of the desert, I found a well in the fort to be so, it contained as much as 6.5 per cent. of saline matter, and the water in the large pukka well at Rojan is generally found to be brackish and purgative, but is more especially so in the hot months, at which season there are fewest travellers and evaporation is most rapid. I had some of the water from the latter well sent to me for examination, but from its having been much drawn just before, I did not find more than the trifling admixture of saline matter that well water usually contains. The small kucha wells at Rojan from which the villagers draw their drinking water, and which are continually being exhausted, yield sweet water.

The mountains on either side of the plain appear to be of limestone, and to the northward the first ridge is of sandstone and claystone, and the next of calcareous conglomerate, beyond which, ridges of different limestones rise in succession. Near Shoran there are sulphur mines, and from thence, along with specimens of the sulphur, I received some alum and a bottle of water very highly impregnated with iron.

In the month of February we marched again and accompanied a portion of the force to the N. E. extremity of the plain. This part of the country we found to be highly cultivated, the greater part of the water of the Naree river being consumed in the irrigation of the lands of the warlike Patans here located; indeed the villagers in the course of the Naree below Mitree, are chiefly or wholly indebted to the floods which follow heavy rain for filling their canals and the tanks that they form by throwing bunds across the channel of the river.

On the 20th February the village of Khujuk was attacked by our detachment, and owing to particular circumstances, a part of this Troop was engaged in the assault and consequently the casualties in it were numerous, being in all one officer and five men killed, and one officer and six men wounded, and also two followers wounded. After halting for a month at Khujuk, we marched to Dadur which is near the mouth of the Bolan Pass, in a well irrigated spot producing jowaree, barley, wheat, cotton and indigo. It is in some measure separated from the rest of the plain by the Nowshummun, a low ridge of hills of claystone with sandstone overlying it, which runs about W. S. W. and E. N. E. and its confined situation appears conducive to its overpowering heat during the season of the sun's greatest northward declination, for the heat at Bhag, which is in the open plain, although described as being intense, is allowed to be far more endurable and to be less unhealthy than that at Dadur.

In *January* we had severe cold during the nights and mornings; on the

morning the Troop marched from Shikarpoor, the thermometer fell to 25° Fahr., and the water in the canteens carried by the men was frozen. In *February* the weather became milder, and in the last week of that month we had heavy rain. *March* was agreeable in temperature. In the beginning of April at Dadur the weather rapidly increased in heat and became close and disagreeable. The wind up to the middle of March was generally light and from the N. or N. W. after that time it blew stronger, and at the end of March and beginning of April, a strong S. W. wind prevailed and was accompanied with dust. Up to this time the admissions into hospital were very few, being, with the exception of wounds and accidents, but fourteen during the whole three months: the total number was 23.

After a halt of about three weeks at Dadur, on the 7th April we began to ascend the Bolan Pass to Khorasan. Having passed through the first ranges of hill of sandstone, claystone and calcareous conglomerate, from Kundye we continued to ascend the bed of the stream, our only road, through the Tung-i-Guttee, a chasm of nearly two miles in length in a compact white limestone, whose fossils are cephalopoda (chiefly spherulucea) and corals; this rock is cavernous and also very much and minutely fissured. The valley then became wider and disclosed in its precipitous sides a greenish blue shale under limestone. A little below Kirta the only habitation of man seen in the Pass, from the abrupt termination of the mountain ridge on our left, the valley suddenly opened out much more. We encamped in the Kirta plain at Gurm Ab, where a warm spring rises out of the nearly level ground; the temperature of the spring I found to be 82° Fahr. After passing Beebeenanee we came to Ab-i-goom where, as the name indicates, the Bolan stream is lost in the shingle. Ab-i-goom is in the centre of a basin more than half encircled by lofty mountains of a purplish-grey limestone, abounding in encrinites, cephalopodous mollusca &c. and open towards the S. E., and it is in the midst of rocks of the coal formation, which extend in every direction for several miles and are then lost under a thick deposit of recent and imperfectly solidified conglomerate of rolled limestone, that reaches to the bases of the surrounding mountains, the strata of which dip under it. The beds of this coal formation have been much and to various extents upheaved. In a mural cliff on one side of the bed of the stream in which our road lay, there were disclosed seams of coal inclined from 60° to 70°: in this cliff were the best specimens of coal that I could find in a superficial search in a circuit of several miles, and here it existed in quantity by far too small to render it of any value, in 660 feet of rock contained but an aggregate of

4 feet of coal and this small quantity was distributed in seams varying from 3 to 9 inches in thickness; in quality it was rather inferior; even were the coal on search found to be abundant in this district, its locality at a distance from any supply of labourers and offering such obstacles to transport, in the state of the road and want of forage, must preclude any advantage being derived from it. A loose bluish clay shale, in which I could find no vegetable impressions, alternates with the carbonaceous seams and limestone and a little calcareous sandstone; the shale contains talc and gypsum. At Sir-i-Bolan from the foot of a mountain, a large stream gushes out, the temperature of which I found to be 70° Fahr. and in October, when we were descending the Pass, it was the same, but this is considerably above what the annual mean temperature of the air can be at that place and the stream issuing from a limestone mountain makes it the more likely to be a thermal spring. A little below * Sir-i-Bolan an adiantum of a species common in Khorasan was found growing, as is its habit, in the shade of an overhanging bank close to water; at Sir-i-Bolan the colocynth, which grows rather plentifully in Kuchee, is last seen, and a little above that place the acaciæ, capparis, asclepias, nerium and "puneerbund," disappear and are replaced by the pistacia, amygdalus, ficus (carica) daphne†, which are found in the long narrow and deep zigzag defile, through which at seasons the mountain torrent flows and which terminates the Pass at its upper end: an arboreous juniper (the J. Phœnicea) is abundant in some neighbouring ravines and attains a great size, one I measured was 8 feet in girth. On emerging from this defile by the Khur Lukkee, we entered on a plain covered with salsola and southernwood, and sprinkled at that season with the blossoms of bulbous plants among which was the tulip. This plain is without water and consequently unproductive, and it bears the appropriate name Dusht-i-bedowleh: from it we entered the valley of Shal, which likewise abounds with artemisia and salsola, and also with a peganum, a handsome sophora and a yellow flowered corymbiferous plant called mungoolee by Brahoos and gungoo by Patans, but I need not add to what I have already written in my Statistical Report on this valley.

On ascending the Pass, at Ab-i-goom we experienced a very sensible decrease of temperature and this became greater as we advanced. We arrived at Quetta about the middle of April and had for some time cold

* The elevation of Sir-i-Bolan above the level of the sea is estimated to be near 5000 feet.

† This daphne, which is called "peepul," by the natives of the country, appears to be the D. salicifolia, it is given by the hukeems as an emetic, the dose being two leaves rubbed up with water; its action is said to be powerful.

and rainy weather: the neighbouring hills were still capped with snow. The temperature soon however increased, and it rose rapidly until the middle of June. In July the heat was more oppressive from the cloudy and hazy state of the atmosphere, and in August too it was sultry; this year the temperature far exceeded its usual height. In the beginning of September at full moon there was a sudden and great diminution of temperature, after this the daily mean of the thermometer fluctuated considerably, but it decreased rapidly although irregularly, and in the middle of October when we were at Sir-i-ab, at the head of the valley of Shal, on our return to Kuchee, the ponds in the mornings were frozen over and the thermometer, shaded from the sky, at sunrise was observed as low as 25.°5 Fahr. On descending the Bolan Pass we again came into a warmer atmosphere.

In *April*, the month in which we were subjected to the change from the climate of Kuchee to that of Khorasan, the number of admissons was 14 inclusive of surgical cases: in *May*, which was mild, there were 9 admissions: in *June*, *July* and *August* they were again more numerous, being for those months respectively 17, 16, and 13: in *September*, when miasmata became more powerful in operation, there were 24 admitted; in *October* 23, and at Dadur during 29 days in *November*, there were 25 admissions.

The number of admissions during the past eleven months has fallen far short of what the returns show to have taken place at Poona, the most favourable of our stations, in 1840 the most favourable year that we passed there, while the average strength of the Troop has been greater than it then was.

## MEDICAL PRACTICE.

During the past eleven months there has been little variety in the forms of disease, and the classes "Bowel complaints" and "Fevers" embrace the bulk of the medical cases admitted.

*Diarrhœa.*—This complaint in Kuchee during the cold weather shewed itself in various degrees of severity, sometimes being mere relaxation of the bowels with thin feculent motions, at other times the flow of mucus was still more increased, and if this was allowed to go on, the mucus became tinged with blood and the disease merged into dysentery. In several instances it appeared to me that the prevalence of diarrhœa was increased by putrid carcases tainting the air with their effluvia and by their being allowed to lie in the streams furnishing the camp with water; thus at Korana, our first march from Khujuk towards Dadur, the Troop was encamped in the midst of putrid camels, no change was pe

ceived to have taken place in the weather and the water was from the stream from which we had drunk for several weeks, yet many were here seized with looseness of the bowels. The treatment in this mucous variety of diarrhœa was usually a laxative followed perhaps by an anodyne.

In Shal (and I found it the same at Mustoong) the diarrhœa of the hot season was of a different nature and appeared to be consequent on a deficient secretion of bile, the causes of which I have entered fully into in my report on the Medical Statistics of Quetta before referred to.* The dejections were grey, whitish or quite white, and thin, feculent and frothy or semifluid, (in some rare cases where no diarrhœa existed the motions were formed and quite white): there were uneasiness and distention in the upper part of the abdomen in almost every case and especially after food. The state of the tongue varied, generally it was furred and foul at base, sometimes the papillæ were very slightly prominent and whitish, at other times the tongue was clean. Hæmorrhoids very commonly accompanied this state of the bowels, and there was occasionally tenderness when pressure was made over the gall bladder, probably from the existence of some distension of that viscus from retained bile. This state of the bowels if concealed by the sufferer, sometimes ended in dysentery, and sometimes in ulceration of the mucous membrane and enlargement of the mesenteric glands. The treatment which I found most useful was putting the patient on farinaceous diet with the finest bread and interdicting all solid animal food ; the exhibition of mild mercurials such as Hydrargyrum cum creta and Pilula Hydrargyri with alkalies and often with Fel bovis inspissatum and small quantities of Opium; in some cases I gave minute doses of Hydrargyri chloridum with Ipecacuan and Opium. When bile was again freely secreted and tinged the dejections, the diarrhœa soon ceased ; in some obstinate cases where tenderness in the region of the gall bladder existed, I thought good resulted from the application of blisters over it. But removal from the extremely dry air of Khorasan or of Kuchee to a moist climate, as that of the sea coast, or in the cold weather perhaps the banks of the Indus, offers a greater probability of recovery in obstinate cases than any course of medicine. At the time that this diarrhœa was prevalent, the hepatic secretion was abundant in fever cases and in these the usual emetic almost always brought up a quantity of bile, and it was by no means unfrequent that this form of diarrhœa was thus checked by the supervention of an attack of fever. In two cases that came under my care unconnected with the Troop and in one belonging to it, tenderness of the gums from the mercurial medicines was complained of while the motions con-

* Transactions, No. iv.

tinued whitish or white, in the last mentioned case the patient was attacked with fever and bile then began to flow.

*Dysentery.*—It sometimes followed diarrhœa and was subacute, and at other times it was sudden in its accession and sthenic in character: in some cases there was an increased flow of bile. The treatment has been nearly similar to what I have stated in former Reports, to the Ipecacuana however, either with or without blue pill, I have often added small quantities of Sodæ sesquicarbonas with great advantage, especially where the redundant bile caused scalding motions and was an additional source of irritation: in the severely inflammatory cases, I have also added small quantities of Potassæ nitras. The want of good leeches has been very much felt in the treatment of this complaint, cupping being not so well adapted to give relief. In illustration of the treatment of dysentery the case of Gunner Wm. Miller may be referred to. Two fatal cases of this disease have occured, one at Quetta in September in which death followed perforation of the cæcum by an ulcer, of which many of old standing were after death found to exist; this man had continued to perform his duty and never came under treatment until the final short attack: the other died at Dadur after many relapses. One has been sent to the coast for change of air.

*Fevers.*—During the cold weather instances occurred of fever complicated with congestion and inflammation of the lungs. Among the Europeans of the Troop there were two such, one at Shikarpoor and one at Quetta. Among the native followers the cases were more numerous. The case that occurred at Shikarpoor was in a man of intemperate habits, he had been two days ill in the lines and at the same time drinking hard, he came to Hospital the night before the Troop marched and died three or four days after, while we were crossing the desert. The diary of the case, as usual, was transmitted at the time. In the other case which was treated in the same manner, viz. by active depletion and the use of Tartar emetic the disease was subdued. At Quetta, cerebral congestion was a common concomitant of fever both on our first arrival and afterwards in the hot season; exposure to the sun was in the latter case usually assignable as a cause. While detached on duty at Mustoong and in charge of the wing of H. M. 41st Regiment and the company of European Artillery there, I observed the same complication. Some of the cases treated in the Troop Hospital were of great severity. Both general and local bleeding were employed, but the latter was by far the more advantageous, and here again the want of leeches was felt, cupping was freely employed and in two cases the temporal artery was opened; cold wet cloths were applied

to the shaven head and cold water was poured in small stream from a height on the head, or was thrown with force upon it by means of a large syringe every hour or two hours. The case of Gunner Simpson is illustrative of the complication. In September and October intermittents, apparently from endemic causes, became more numerous and often quinine failed to check the disease until venesection had been employed. In November also at Dadur, where the Troop is now encamped, the admissions for intermittent fever have been numerous.

*Hepatitis.*—The only four cases that have occurred during the year have been admitted in November since our return to Kuchee. All were men who had not before been in Hospital during the year, and two were staff Serjeants and therefore not liable to much exposure; in one the disease of the liver is complicated with fever under which head the patient was admitted; the fourth case is chronic. One of these patients when the hepatic inflammation had been subdued was attacked with dysentery and a change of climate being thought to offer the only prospect of ultimate recovery he was sent towards the coast.

## SURGICAL PRACTICE.

*Retention of Urine.*—A case was admitted and terminated fatally, but as I was at the time absent from the Troop I shall not enter into the particulars of it.

*Incised Wounds.*—After the attack on Khujuk there were three admissions, and in each case the wounds were numerous, each man having had to contend with many opponents at once. In one, besides two wounds in the right arm and one over the patella, a sword cut had dislocated the head of the left radius and broken the head of the ulna into fragments, laying the joint extensively open; amputation of the arm by the double flap operation was performed $3\frac{1}{2}$ hours after the receipt of the injury. In another man, besides a small cut in the forearm, there were two severe wounds received simultaneously while in the act of using his sword, one was from a sword which divided the triceps extensor of the right arm about its middle, and raised a flap which terminated on one side in the axilla and on the other at the acromion process, the deltoid muscle also being divided: the other wound was from a battle axe; it penetrated the right side of the chest under the scapula. The wounds were closed by the interrupted suture, adhesive straps and bandages. There was secondary hæmorrhage to a considerable extent from the humero-thoracic artery, which on the receipt of the wound too had bled freely, notwithstanding this, thoracic inflam-

mation had to be combated by some further depletion. His arm is disabled and he has been sent before the Invaliding Committee. The third man had a superficial cut on the back of the right shoulder and a more severe one on the outer side of the left arm, beginning a little below the elbow, extending upwards and raising a flap with a slice of bone from the humerus just above the outer condyle but not implicating the joint; the piece of bone was removed and the wounds were closed by suture, adhesive straps and bandage; he had also a small wound in the right cheek implicating the parotid gland, the scales of his helmet saved him from its being severer, the helmet also saved his head from another cut and this is not the only instance which occured that day where the helmet protected its wearer in the melée. This man tried to make the wound in his arm a plea for retiring from the service on a pension and a Medical Committee had to pronounce on his case when he refused to perform his duty: the unanimous opinion was that the wound caused no permanent disability. Wounds received in action are very often the occasion of men malingering with a view to being pensioned, and of this the Committees which we have had in the Field Force have afforded many proofs; the utmost firmness in the medical officer is required to check this, but it is a disagreeable thing to have to behave with even the apparent harshness to a man who has been wounded in doing his duty in the day of battle.

*The Gunshot wounds* were all from matchlock balls and received at Khujuk; two were very slight, one of a finger the other of the leg, and two were of the thigh, in one of these the sciatic nerve was wounded; the man suffered much pain from the wound downwards to the toes but especially in the outside of the leg, there was also an intolerable burning sensation for sometime in the foot and toes, these were alleviated by opiates internally and the local application of cloths dipped in cold water. He can now walk with very little lameness when inclined to do so, and there is every prospect that he will soon be able to return to his duty. A Native Artificer on the same occasion was wounded in the leg by a matchlock ball which lodged near the head of the tibia and had to be cut out, and a Dhooleebearer received a ball in the right cheek which made its exit behind the left mastoid process of the occipital bone; the man at first had difficulty in taking food, and liquids regurgitated through the wound in the cheek, but he soon got well.

Among the wounded of the enemy that we found in the village, I had some severe cases from *spherical case* and also from *musket shot wounds*.

In addition to the surgical cases among Natives which are mentioned above, there were the following.

*Retention of urine* with the urethra lacerated by the forcible attempt of an ignorant Hospital Assistant to pass a catheter; I punctured the bladder above the pubes with success.

*Dislocation of the head of the humerus* which took place in the man's raising a bundle to his head.

*Dislocation of the elbow-joint* in a horsekeeper received in falling.

*Fracture of the femur* from the kick of a horse.

*Amputation of a finger* in a horsekeeper on account of an injury.

*Wound* from a knife *of the palmar arch* in a Native of Kuchee of ten or twelve days standing, hæmorrhage continued and the blood still issued per saltum when the wound was uncovered; properly directed compression stopped the bleeding and the wound healed rapidly.

*Sword wound*, dividing the scapula and penetrating the chest; active depletion was requisite; the man recovered.

*Dadur*; 29*th November*, 1841.

## Article V.

### * *Reports on the Medical Statistics of Upper Scinde, drawn up by the Medical Officers serving with the Force under the command of* Brigadier England.

Presented by the Medical Board, November, 1842.

### 1

*Report on the Climate of Quetta, during June, July, and August,* 1841. By R.B. Owen, M. D. Surgeon, 3rd Light Cavalry.

I arrived at Quetta on or about the 17th May, 1841, in medical charge of the 3rd Regiment, Light Cavalry, and during my stay there (a period of about three months), I made daily remarks on the climate, temperature, &c. of the place; with other meteorological observations, which I hoped at a future time I might find useful, but having been robbed by the Kakurs, of a large amount of property while travelling through the Kutchlack Pass, and my portfolio with all my observations on these subjects, having been stolen at the same time, I can now offer little or nothing more than my opinion of the salubrity, or otherwise of the cantonment

* *Note by the Secretary.* These reports were drawn up in conformity to the subjoined memorandum, and of this series of Reports, the one by Mr. Leith on the Medical Statistics of Quetta, and that by Mr. Deas on the Climate of Dadur, were published in the last No. of the Society's Transactions, (No. iv). They are in consequence omitted now.

Memorandum for Medical Officers.

The Medical Officers of this force are to be called on by the Assistant Adjutant General to report, for the information of the Supreme Government of India, on all points regarding the Medical Statistics of their respective stations.

1. The climate generally as regards the troops.
2. The average number of Soldiers per cent. under medical treatment, during the worst months and during the best
3. The seasons showing the best and worst for the troops, and whether the past season has been in any way a peculiar one.
4. The number of deaths during the last four months out of men.

during my short residence there, and this, be it remembered, I can do only from memory.

Two principal diseases soon became prominent for their severity, viz. bowel complaints of various forms, and fevers.

The bowel complaints among the natives admitted into Hospital, were some of them exceedingly severe, baffling every remedy, until in several cases it was found prudent to omit all medicines for a time; and as many of these cases remained in Hospital after I left the Regiment, I know not what the event proved: — the deaths during my time were very few. Indeed it was admitted by all, that the season at Quetta this year was one of unprecedented heat, the range of the thermometer was occasionally very great between the day, and the night. During the day time we had generally very high winds blowing from the westward, accompanied by clouds of dust, while at night-fall the wind veered to the eastward. The position of the camp was most open, and exposed to all vicissitudes, without the slightest protection, excepting what the tents afforded, and no doubt these constant vicissitudes would have a powerful influence on the native soldiers, and followers, who are generally so very indifferently clad: I had frequently to remark this circumstance, but could seldom find a remedy.

The most severe forms of dysentery were frequently accompanied by fever, and proved more obstinate; accordingly I was myself the subject of bowel complaint several times, while at Quetta. I suspected the water had caused it, and from the obstinacy of the disease among the natives in Hospital, I was induced to conclude that some of the water in the neighbourhood must have had pernicious qualities, and had a great influence on the health of the patients, as in such obstinate cases I kept a most vigilant watch over them, and was convinced that I could discover in no single instance that these people had been indulging in crude vegetables, or fruit of any kind.

5. The sort of accommodation which the troops have had, and specifying how far sickness has been influenced thereby.

6. The particular months during which each station is most unhealthy, and the causes.

7. The unwholesomeness, generally of particular places.

8. The Medical officers are to be directed to make these documents as complete as possible, and to offer such suggestions, as to clothing, &c. with a view to remedy the evils discovered, as may be most likely to lead to the attainment of that desirable object.

By order (Signed) W. Wyllie,
*Major A. A. A. General Scinde Force*

*Camp, Quetta, 6th September*, 1841.

Taking then into consideration all that our short experience of Quetta and its neighbourhood has shown, I should be inclined to conclude that its climate and other causes have proved it most pernicious to the health both of Europeans and natives, as numbers have had their constitutions dreadfully broken up, the effects of which they may never recover.

In my official letter, dated Shereewab, I explained the impossibility of my being able to make out any regular report of the climate of Quetta, and I have now only to repeat, that I have no other means than from memory, which I must urge as an excuse for the extreme poverty of those remarks, and the information I possess on the subject.

*Kelat, 3rd October*, 1841.

## 2

*Statistical Report on the encampment, Head Quarters Scinde Force at Quetta.* By J. Patch, Esq. Surgeon 21st N. I. and Superintending Surgeon S. P.

The ground on which the Head Quarters of the Scinde Force are at present pitched, is a gradual slope of considerable extent, being one of the vallies formed by the divergents of rocky mountainous ranges at the top of the Bolan Pass, about 49 miles from it, and in about 30 north latitude, and 66° 50′ east longitude, the elevation above the sea is upwards of 5000 feet; none of these ranges appoach nearer the camp than 4 or 5 miles, generally they are at a much greater distance and are between 2 and 3000 feet in height.

The camp is very considerably elevated above the town of Quetta, distant something more than a mile in a south-westerly direction, and a spot occupied by the political agency where are also situated the ordnance stores, and the projected lines of the 20th Regiment, N. I. The whole of this latter locality is, as far as can be judged by the eye, the lowest spot in the neighbourhood. A stream of water issues at a gorge in the north-eastern corner of the valley, and supplies the whole of the slope with water in moderate quantity and of a very tolerable quality. The soil is a light coloured alluvial deposit, mixed with calcareous and silicious matter, and very much made up of stones rolled and rounded by the action of water.

This ground on our arrival in the early part of April was partially covered with wild flowers, and tufts of southernwood, but since the hot weather scarcely a trace of vegetation remains. Cultivation is not very abun-

dant. In April the wheat was beginning to get into ear, and it was cut in July. More miasma may probably be generated by the quantity of lucerne grown, than by any other kind of cultivation. Having only been here a little more than five months, I can but speak of the climate during that time.

During the whole month of April, the prevalent wind was from a little to the northward of west, with a good deal of rain, and in cold weather, snow remained on the loftier mountain tops until very late in the season, and it was to be found in some of the crevices, even in the month of July.

In the month of May a great change of temperature took place, which in the latter part became rapid, and I look upon the sudden change then, and generally speaking the changeableness of the climate as being very prejudicial to health. All June, July, and August, were very hot, although not perhaps very oppressive. Solar radiation is very great.

The wind during this period was from the westward, sometimes a light air set in from the south-east towards evening, and fogs occasionally prevailed with a sensation of dampness.

*The following is a Table of the range of the Thermometer during five months, commencing with the 1st of April.*

| | April. | May. | June. | July. | August. |
|---|---|---|---|---|---|
| Minimum . . . . . | 36 | 53 | 63 | 64 | 62 |
| Maximum . . . . . | 92 | 104 | 107 | 109 | 107 |
| Mean of Minima . . . . . | 58 | 75 | 82 | 83 | 69 |
| Mean of Maxima . . . . . | 76 | 84 | 97 | 103 | 99 |

I have had very little opportunity of becoming acquainted with the state of health of natives of this part of the country, but as the circumstances under which they are placed differ so materially from those likely to affect troops, I think it need not be particularly attended to.

I omitted to remark that the thermometer was observed in a rowtie, the description of that in general use for native Troops in Hospital, a kind of covering affording but little shelter from the intense heat of the day or severe cold occasionally at night.

*Table of the principal Diseases affecting the men of the 21st Regiment N. I. from the 1st of April, to the end of August,* 1841.

| | April. | May. | June. | July. | August. |
|---|---|---|---|---|---|
| Mean Temperature of each month . | 67 | 79½ | 89½ | 93 | 84 |
| Strength of 21st Regiment . . . . . | 1024 | 1059 | 1061 | 1061 | 1060 |
| Bowel Complaints . . . . . | 37 | 27 | 26 | 22 | 27 |
| Fevers . . . . . | 34 | 31 | 45 | 50 | 111 |
| Rheumatism . . . . . | 10 | 10 | 15 | 15 | 15 |
| Other Diseases . . . . . | 64 | 34 | 47 | 47 | 39 |
| Total . . . . . | 145 | 102 | 126 | 134 | 192 |
| Number per cent under treatment . . | rather more than 14 pr. cent. | less than 10 pr. cent. | 12 pr. cent | less than 13 pr. cent. | less than 19 pr. cent. |
| Number of deaths . . . . . | 3 | none. | none. | 1 | none. |

From these statements it will appear first with reference to the thermometrical register that the temperature goes on increasing in a somewhat regular manner monthly to July inclusive, but with regard to sudden changes it must be understood that they are of frequent occurrence, and comparatively cold gusts of wind come down from the ranges of mountains around us.

Secondly, That on looking at the table of diseases, there is a great increase in the number of fever cases as the temperature diminishes and this continues to be the case. This brings us to the conclusion that some other cause besides high temperature must be looked to as the main agent in their production, and from all that I can observe I think there is no doubt that fever is endemic at this station. Whether to an equal extent with Guzerat and other similar parts of India, I cannot of course say, as a residence of some years or reference to medical registers, can alone decide the question.

With regard to bowel complaints, the returns of the 21st Regiment do not show that they are of very frequent occurrence or of a serious nature, but although this has been the state of one particular regiment, I am aware that they do prevail very extensively and are exceedingly obstinate in their nature.

Rheumatism, I look upon as another disease which it is of much consequence to notice; if found to prevail at any particular station, that station should be avoided of all others, as it is the disease which causes the filling up of our pension list to a greater extent than any other, and I mention this because I think it likely that the severe cold of winter here may be ex-

tremely productive of it in native Troops. It appears then from the following circumstances, viz. 1st, That bowel complaints are of frequent occurrence and of an obstinate nature. 2nd, That fever is endemic during July, August, and September, and from intense solar radiation and sudden changes of temperature likely to be of a highly congestive nature at all seasons, as far as they have been observed. 3rd, That Rheumatism is to be apprehended from several causes. 4th, There being no apparent immunity from any particular class of diseases and convalescence proceeding slowly in all, that we may conclude that Quetta cannot be considered a healthy place. July and August may certainly be reckoned the most sickly season.

The men during the whole period under consideration, were living in rowties, and their food not particularly good, sufficiently varied, nor had they their usual supply of vegetables as when in India.

The obvious means of meeting and moderating the evils attendant upon a sojourn at this station, will be in the careful adaptation of clothing to the season, most particularly that of warm clothes during the winter and the shelter of houses, due care being had recourse to for their proper ventilation, consistent with the exclusion of violent currents of air; exercise of course will be most indispensably necessary.

The selection of a proper spot for a cantonment is a matter of the utmost importance; I imagine fever prevails in the proportion of five or six to one in the lower camp, (alluded to as the spot occupied by the political residency and projected lines of the 20th N. I.) compared with what may be expected in the Head Quarters camp, situated as described on the slope rising up as before mentioned, and than which I cannot imagine a better place for a cantonment, particularly when it may become sheltered by buildings, &c.

In conclusion I believe it may be considered that the past has been an unusually unhealthy season.

*Quetta*; *September*, 1841.

## 3

*Medical Report of Moostoong.* By A. Wright, Esq., Assistant Surgeon, 25th Regiment, N. I.

Moostoong is situated in 29° 43′ north latitude and 66° 35′ east longitude and is elevated 5300 feet above the level of the sea; the valley of Moostoong is an alluvial plain running from north to south for about eight or ten miles, having high barren hills on each side. The valley is plentifully supplied with good water which is brought from the foot of the

hills, by means of aqueducts; and is scattered over with villages, orchards and corn-fields, the two last particularly about Moostoong.

The troops were encamped at Khoodawut about a mile to the eastward of the town on rising ground of a sandy soil and covered with low camel shrubs; the whole of the ground towards the south-eastern hills is very barren, being chiefly drifted sand towards the west and north, and close to the camp are orchards and cornfields. When the Troops arrived it was in the middle of April; the trees were coming into foliage and the corn was coming into ear, the weather was cold and raw, rain having fallen a few days before and the tops of the high range of hills were covered with snow. From the 20th to 27th of April, the weather continued cold and damp with occasional showers of rain and thunder; on the 28th a thunder storm with heavy rain and hail, the hills were again covered with snow which remained for several days. The thermometer's highest diurnal range 82, lowest at sunrise 52. In May the weather became warmer and towards the end of the month it became oppressive, the wind was generally from the north-west and dust storms. Thermometer's highest diurnal range 94, medium 81, lowest at sunrise 56. In June the heat continued to increase during the day, the nights remained cool and pleasant. Thermometer's highest diurnal range 94, lowest at sunrise 68, medium 81.

The Troops stationed at Moostoong consisted of a Wing of H. M.'s 41st Regiment, 3d Company 1st Battalion of Artillery, and the 25th Regiment N. I., the former occupied houses, the others were in tents.

*The following Table will show the average number of Soldiers per cent. under medical treatment during the months of April, May, and June.*

| | | Fevers. | Bowel Complaints. | Other Diseases. | Died. | Total Deaths |
|---|---|---|---|---|---|---|
| Right Wing H. M.'s 41st Regiment. | May. | 7 | 3 | 4 | " | " |
| | June. | 22 | 6 | 4 | 3 | " |
| | July. | 4 | 5 | 5 | 5 | 8 |
| 3d Company 1st Battalion of Artillery. | April. | 1 | 1 | " | " | " |
| | May. | " | " | " | " | " |
| | June. | 1 | 2 | " | " | " |
| 25th Regiment N. I. | April. | 10 | 2 | 11 | " | " |
| | May. | 7 | 2 | 7 | " | " |
| | June. | 10 | 2 | 5 | 1 | |

The most prevalent diseases have been fevers and bowel complaints. It would not be fair to ascribe the cause of these diseases altogether to

the climate of Moostoong, as a great number of the cases were contracted either in Cutchee or in the Bolan Pass, and chiefly caused by the sudden change of temperature. Before the troops left Cutchee, the weather was very hot; in the Pass, it got suddenly cold, accompanied with rain, and these were rendered more efficient by such causes as diminish the constitutional powers of resistance, viz. fatigue from loss of sleep and continual long marches, and night duties. The heat of the day keeping up a very free exhalation from the skin, I shall call the predisposing, and associate with it loss of sleep, and fatigue. The exciting, the cold chill of the night, checking this exhalation, and with it associate night duties. The cause will therefore resolve itself, simply to checked perspiration, acting upon bodies with a peculiar predisposition; this predisposition the effect of climate.

Having been only stationed at Moostoong for about two months, I cannot speak as to the different seasons, but from all I could learn from the natives of the country, the months of July and August are considered by them, to be the most unhealthy; they seem to think that the climate is good and do not suffer much from sickness. It is reckoned by them far superior to Quetta. The diseases to which they are liable, are fevers and bowel complaints during the hot season; in the winter they suffer from pulmonary affections. From all I can learn, it bears a considerable resemblance to Kelat as to the nature and physical effects of the climate upon the troops and the people themselves.

In the table it will be observed that the Wing of H. M.'s 41st had the greatest proportion of sick in June, greatest number of deaths in July. This is owing to the detachment that was at Nowsky, and I understand that all the deaths that occurred were men who had been with that detachment.

How far sickness has been caused from the men having been exposed in tents I am not prepared to say; the soldiers of H. M.'s 41st were in houses or rather huts; they suffered more from fever after they removed into them, and the Medical Officer thought proper to remove them again into tents, when they gradually got better; the men of the Artillery again were in tents during the whole season, and they remained, comparatively speaking, healthy. During the short time they were under my charge, I frequently had not a patient in hospital, but still I am of opinion that if they had had good substantial barracks, they would in all probability have suffered less in a country where great and sudden changes of temperature take place; good houses and suitable clothing are absolutely necessary for the preservation of health and a great preventive of disease.

I understand that Moostoong, like all other places in the country, has

been more than usually unhealthy this season on account of the heat being greater than it is in general years.

*Camp, Dadur, 26th November*, 1841.

4.

*Medical Report of the Fortress of Kelat.* By A. Wright, Esq., Assistant Surgeon, 25th Regiment, N. I.

The fortress of Kelat is situated between 29° North latitude and 65° to 67° East longitude, and is elevated 6000 feet above the level of the sea. The town and citadel are built upon the extremity of a high broken ridge of hills sloping down from the south-westward; the citadel is built upon its north-western extremity, where it falls abruptly into a narrow alluvial valley below; the citadel rises two hundred and twenty feet above the valley, and a village encircling its north eastern base stretches outside the walls to the southward. In front and to the left from the northern angle of the fortress, arises rather abruptly a low irregular broken hilly ridge, which gradually ascends to the westward. Immediately to the east of this from north to south skirting the ridge and south-eastern face of the fortress, stretches an alluvial plain from two to three miles in breadth. This plain is quite level, and is thickly strewed with walled orchards and villages as far as the high south eastern hills.

The town is surrounded with a high mud wall with circular bastions at intermediate distances; the houses are all built of mud, and the streets are narrow and confined and in a filthy state; good water is abundant; the stream that supplies the town and valley rises out of the foot of the south eastern hills.

The surrounding country is irregularly mountainous, interspersed with gravelly ridges, alluvial valleys, and plains, and, where uncultivated, is covered with low dry looking camel shrubs. The hills are formed chiefly of limestone rocks, and are plentifully interspersed with irregular pieces of flint.

The grains that are chiefly grown are wheat and barley, both very good of their kind. The gardens produce melons of excellent quality, apples, apricots, pears, mulberries, plums, and grapes. The country is miserably deficient in esculent vegetables, the whole catalogue consisting of cucumbers in season, turnips and carrots of a very inferior tasteless kind, onions, brinjals, and one or two bad kinds of badgi.

In regard to the climate, I can only speak for the three months I have been here. In July the heat during the day was very oppressive, mornings

and evenings pleasantly cool; from the 25th to the 31st, cloudy, with thunder towards evening, and on two occasions rain fell; the inhabitants generally expect rain at this season, but they say that very little has fallen for the last three years, and on this account the heat this season has been much greater. Wind during the month, generally from the south-west. Thermometer's highest diurnal range 89 to 91½; lowest at sunrise 73. August, the heat this month was not so oppressive; on the 14th, 15th, 16th and 17th, there was thunder with light rains, mornings and evenings cloudy and hazy, wind during the month generally from the west. Thermometers highest diurnal range 79 to 88; lowest at sunrise 72 to 80½. September, the heat began rapidly to decrease, and the mornings and nights were very cold, the atmosphere during the month being clear and dry, winds blowing steadily from the north-west, thermometer's highest diurnal range 72 to 76; lowest at sunrise 35½ to 68. I may observe that the range of the thermometer was taken in a good substantial building occupied as a temporary hospital.

The troops stationed at Kelat, consisted of a detachment of the 3rd company, 1st Battalion of Artillery, and the 25th Regiment; the men occupied good houses in different parts of the town, and were well protected from the excessive heat.

*The following table will show the average number of soldiers per cent, under medical treatment during the last three months.*

| | | Fever. | Bowel Complaint. | Other Diseases. | Died. | Total of Deaths. |
|---|---|---|---|---|---|---|
| Detachment of Artillery. | July. | 1 | " | " | " | " |
| | August. | 1 | " | " | " | " |
| | September. | " | " | " | " | " |
| 25th Regiment, N. I. | July. | 32 1 | 1 5 | 5 4 | 3 | " |
| | August. | 32.2 | 1 3 | 3 | 6 | " |
| | September. | 22.2 | 1.1 | 2.2 | 1 | 10 |

The most prevalent diseases have been fevers and bowel complaints, and the greatest number of sick were in the month of July and August. Since my arrival here I have instituted many inquiries with the view to obtain some information as to the nature and physical effects of the climate upon the people themselves, and the diseases to which they are liable, &c. From all I could learn, this place is esteemed by them the healthiest spot in this part of the country; and from what I have seen, their diseases are few and simple, chiefly intermittent fever and bowel complaints. The seasons that these diseases prevail, are during the months of July and August;

the rest of the year is considered by the natives to be very healthy. This season is considered by them to have been a peculiar one, much more sickly than usual, and they attribute the cause to the excessive heat.

The fever has all along been of the intermittent form, and, generally speaking, mild; several cases were complicated with bowel complaints. In estimating the number of sick, it must be recollected that the 25th Regiment had suffered severely from fever and ulcers whilst stationed at Kotra in Cutchee, and also during the march up the Bolan Pass. In the month of May, whilst stationed at Moostoong, the men suffered considerably from bowel complaints. With regard to the causes of the bowel complaints, I consider the most essential were, the great diurnal variations of temperature with a high range of the thermometer acting upon bodies possessing a peculiar predisposition.

The causes of the fever were, no doubt, malaria, combined with the great solar heat, acting on bodies previously predisposed; a great many deductions must be made for ephemeral attacks from exposure to the sun, and a number from relapsed intermittents.

In the cold season I have no doubt that pulmonary complaints will be of frequent occurrence. The localities in the vicinity of this station cannot be greatly instrumental in the production of disease. The cultivated lands north and east, are not sufficiently irrigated, and the absence of jungle in the principal valleys, so insures us against the decomposition of animal and vegetable materials, that there is exemption from all noxious exhalations; with these advantages, we might look to the climate as likely to be more than usually healthy. To Europeans of temperate habits, the climate is eminently favourable, in proof of which, I may mention that out of 25 European Soldiers and 10 Officers only two of the former had slight attacks of fever, from which they rapidly recovered. Individuals who were unhealthy in India, have enjoyed good health here; that the climate does not tend to weaken or subdue the constitution, is, I think, evinced by the fact of the Europeans all looking healthy and robust. Again with regard to native troops, we may reasonably conclude, and our experience goes to confirm the inference, that Kelat is never likely to be a healthy station for the natives of India, the variation of temperature being too great, and the extreme cold in the winter season must necessarily prove most injurious to the health of the inhabitants of a hot climate, although the prophylactic means of good housing and plenty of warm clothing, might do much in warding off its effects.

*Camp, near Moostoong, 12th October*, 1841.

## 5.

*Medical Report on Kotra.* By W. S. Babington, Esq., Assistant Surgeon, Left Wing 1st Regiment, Light Cavalry, Lancers.

The climate of Kotra generally, as regards the troops, is as far as my experience for eight months will allow me to judge, exceedingly bad.

The average number of soldiers per cent under medical treatment from the 1st of February 1841 to the 31st August 1841, was, during the best months, 27 per cent, and during the worst, 112.

The earliest part of the year, or the cold weather, was, by far, the most healthy, and the months from June to the end of August, the most fatal. From inquiries amongst the natives of Kotra, I could not ascertain that the past season has differed from former ones.

The mortality during the last four months out of 175 men has been 13.

The accommodation afforded to the men was most excellent, all the guard rooms being good, and the men's huts roomy, and well defended from the sun by thick mud roofs, and from the hot winds by mud walls before their doors; and, had they not had such protection, the fatality must have been very much greater.

The months of May, June, July, August, proved the most unhealthy, but at the same time, I think it right to say that I have heard that October and December were also equally so; the cause for the sickness during the period I have first mentioned is, I believe, to be from the intense heat, not only of the sun but also of the wind.

Kotra is in my estimation, a most unwholesome station for troops, not only on account of the climate, but from the fact of the camp being situated in one of the lowest spots around, and surrounded by jungle.

In answer to the last clause, I have only to say that every precaution as regards clothing and protection from the weather was taken, nor was any thing left undone that could in any way add to the comfort of the men, nor is it in my power to suggest any method by which sickness at Kotra could be avoided.

## 6.

*Report on Bhag.* By Captain G. Boyd, 2d Grenadiers.

I arrived at Bhag in command of a detachment of 270 Infantry and 100 Scinde horse, on the 23d April, the weather then delightfully cool in the morning and evening; maximum of thermometer 90 in tents. The weather became close about the 10th of May during the day and night, but the mornings still cool; wind blowing from the north-west; thermome-

ter in a house 87. The climate generally good, from what I could learn from the natives, and I believe the different detachments stationed have found it so, with the exception of being attacked by small sores in July, from eating an excessive quantity of musk-melons, to which the natives attributed it.

Not the means of answering this question. (2)

The best season in my opinion for troops, is from October until the beginning of April, when it becomes warm shortly after sunrise, but to the end of that month troops might without inconvenience from the heat, remain in tents; the last season was a favourable one, from rain having fallen on the 27th April, thus delaying the approach of the hot winds.

The number of deaths out of 270 of the 2d Grenadiers were 5, four from coup de soleil and one from fever. Two sowars of the Scinde Irregular Horse died, one from fever and one from coup de soleil.

During the whole period of my stay at Bhag, the detachments were in routies, but in the day they sheltered themselves in temples and sheds thrown up for the purpose, but of very slight construction. Had good substantial barracks been built, I should think there would be but little sickness, except from the danger of being struck down by the powerful effects of the sun, which in all cases caused almost sudden death. Fever was not prevalent in the town of Bhag, and I had but little of it in the hospital.

I cannot state as to this question. (6)

Ditto Ditto (7)

In the middle of the month of May, the weather increased continually in closeness; thermometer rising to 94 in the house with closed doors and watered tatties; in tents it became 120 and the wind changed to south-west, still blowing fiercely hot, but with a moisture which prevented water cooling as with northerly winds. This wind is considered by the natives most pestilential in its effects, and causing as many deaths as the sun during the day; it prevails all over Cutchee, men suddenly becoming sick and dying in a few hours. The heat and closeness continued to increase, particularly at night, so much so, that our feelings became scarcely bearable, but still for a short time in the early morning there was a coolness, sufficiently so to enable one to have the men at drill in white jackets for half an hour. This fearful heat continued until the end of July, when a heavy fall of rain for three hours took place at night, after which our miseries ceased, for the place became bearable and pleasant in the morning until my departure on the 25th September. During the whole of this period I received fearful accounts of the effects of the heat from

the head Quarters of the regiment at Kotra, whilst I only lost five men from the effects of the sun, and two from fever, but of the whole detachment. The men were encamped on an open place in tents, but during the day took shelter in temples and sheds; the sick which amounted to an average of from 12 to 18, were under cover in a musjid. Thermometer in shade during May, June, and July, 120. A number of sick men who came in from Kotra in August, described the change as most pleasant, and said it was better to reside at Bhag and bear the heat of tents, than die from fever in huts at Kotra. The greatest heat I experienced was on the 18th June, when it rose to 102, and at night on opening the doors and admitting the hot air, it rose to 107.

The inhabitants of Bhag report that it is considered the most healthy place in Cutchee and much cooler than either Dadur or Kotra, which is ascribable to its distance fron the hills; it is also less subject to ulcers than these places. As far as regards health it is decidedly the best spot for a military post, and the only objection which exists (a scarcity of water) is now, I understand, done away with by the river being allowed to run free. *Camp, Dadur, 12th November.* 1841.

## 7

*A reply to Queries concerning the Statistics of Shiakarpore,.* By Assistant Surgeon G. F. Forbes, Left Wing, 8th Regiment N. I.

No. 1. The climate of this station in so far as I may judge from the limited period to which my experience of it extends, is not unfavourable to troops.

At the present season there is a very material difference in the temperature of the days and nights (the latter being very cold); and it is chiefly in this particular that the climate seems to influence the health of the sepoys, giving rise to the prevailing diseases, viz. intermittent fevers rheumatism and affections of the chest.

No. 2. During the best months of this year, viz. from March to September, the average number of sepoys under medical treatment amounted to 21 per cent. per mensem.

The worst months extend from October to March. From the 1st of October up to this date, the average number of sepoys under medical treatment is 36 per cent. per mensem.

No. 3. There are but two seasons, the hot and cold, the former commencing in April, and lasting till about the end of September; the latter from the end of September, until April.

From the hospital returns and from inquiries made by me of Captain W. J. Browne, commanding left wing, 1st Regiment, Native Infantry, who has been here since the 13th of March 1841, the hot season would seem most favourable to the health of the native soldiers.

No, 4. No deaths have occurred for the last four months.

No. 5. The accommodation for the troops at this station is decidedly bad. The lines consist of long, low, mud huts, indifferently built and quite inadequate to protect the soldier either from the heat of the warm season, or the inclemency of the cold one, and I feel convinced that a great deal of the sickness, that has hitherto prevailed, would be prevented by substituting in their stead barracks built with brick, and of a proper height and construction,

No. 6. This station is most unhealthy from the end of September to the end of November. The reasons, I attribute, are, first, the malaria arising from the decomposition of the sediment left after the inundation of the river Indus. Secondly, the rapid change from extreme heat to extreme cold; particularly at night. Thirdly, the want of proper houses for the sepoys.

## 8

*Statistical Report of Sukkur.* By J. Jephson, Esq. Assistant Surgeon.

1. CLIMATE — The climate of Sukkur, is very oppressive; the atmosphere is hot, dry, and loaded with electricity, particularly in the months of July, August, and September. It would seem, as if the solar beams were decomposed by the rock and soil, and thereby producing the electrical state of the atmosphere. The quantity of rain which has fallen this season is very small, only two slight showers in July.

From what I have observed during the past hot season, I should say, it is a healthy climate for natives, but a very trying one to Europeans, and always, an oppressive one in the hot season, arising, I doubt not, from the highly electrical state of the atmosphere. The unhealthy season appears to commence in October, and continues till the end of November, at which time, the river is falling, after the annual inundation; when from the powerful rays of the sun, acting on the decayed vegetable matter, and the clayey absorbent detritus brought down by the river, malaria is rapidly generated, and hence the cause of the prevalence of fever during the months of October, and November. This fever is variable in its character, at one time intermittent at another remittent; the latter often assuming a typhoid character. These months then may be considered, as the unhealthy ones; but for these, I should say this is a healthy climate.

2. For the period of six months, that I have had charge of the 1st Grenadier Regiment N. I. the average portion of those, who have been under medical treatment, in the first four months, June, July, August, and September, is about 6 per cent per month, and the average for the month of October and November, will not be more than 14 per cent. per mensem.

3. If the troops can be protected during the months of June, July, August and September, and not marched from station to station, nor exposed to the great heat of the sun, the period embraced in these months may be considered healthy for native troops; the most frequent disease during these months is coup de soleil. In the past season I had several cases, but only one died, and this was more from old age and debility. The cases of fever during this hot season were generally of a very slight character, arising principally from debility, by exhaustion.

4. Since I have had charge of the Regiment only three deaths have occurred, and one of these, a case of small pox, brought in from Khyapoor while the detachment was stationed there.

5. The lines occupied by the sepoys at the present time are not at all adapted to such a climate as that of Sukkur. They are merely built of reeds, and plastered over with mud, and the roofs are formed of the same material, and the houses are much too low. The heat was so great during the past hot season, that the sepoys preferred going into the date grove, on the bank of the river, during the heat of the day when not on duty.

6. The periods when Sukkur is the most unhealthy are the months of October and November; I am unable to speak of the cold season.

7. The selection of the present encampment by Dr. Don, is a very judicious one, as experience has proved; it is situated on a limestone formation, 50 feet above the level of the bed of the river, and at some distance from its bank, which in a great measure places it out of the reach of malaria to any extent, and thereby much sickness is avoided. No situation in the vicinity of Sukkur could have been better chosen than the one selected by Dr. Don. The distance for the sepoy to fetch water is trifling, and an excellent bazar has been formed between the encampment and the river, which is well supplied with vegetables, — so necessary and so conducive to the health and well being of native troops, and contributes much to the healthiness of Sukkur for sepoys.

I have observed during this hot season that in the cases of fever and

also in other diseases, the human body is affected in a remarkable degree, during the different phases of the moon: the atmosphere about this time becomes most oppressive and depressing to the human constitution,—particularly near the full moon. But my observations have not been sufficiently minute to enable me to enter more fully upon this fact; I can, however, venture to say, that, so often as I have taken notice, I have found that the paroxysms of the fever during the springs were generally more violent about mid-day, than at any other time.

*Camp Sukkur, November* 11, 1841.

## 9

*Statistical report of Sukkur.* By. E W. Edwards Esq. Surgeon 23rd Regiment N. L. I.

1. CLIMATE. The climate of Sukkur is very dry, and for six months in the year very hot. From the time the sun reaches the equator in the vernal, till his return in the autumnal equinox, the heated state of the atmosphere is continuous, and excepting perhaps a thunder shower in July, no rain falls during this period. From the 21st September the heat gradually becomes less and less, till in the month of January the cold is considerable. Whatever rain may fall during the year, which is always very scanty, generally falls between December and March.

The climate is decidedly healthy, excepting for about two months of the year, namely October and November, when from the drying up of the country after the annual inundations and the very great falling of the river, a large surface of mud becomes exposed to the action of a powerful sun. Malaria is thus generated, which affecting a large portion of the community, intermittent fevers become very prevalent: — excepting these two months, the climate is dry, and healthy.

2nd. The average portion of the 23rd Regiment N. I. under medical treatment during the best months, has been a little more than 6 per-cent per mensem; while the average number of the worst months, has been upwards of 12 per-cent.

3. If during the hot months of May, June, July, August, and September, the troops can be kept under good shelter, and not marched about the country, nor exposed to the intense heat of the climate while the sun is above the horizon, the period embraced by those months, may be considered the most healthy for the natives. Coup de soleil is the most frequent disease at this period, and many sepoys die when exposed to the direct influence of the solar rays.

The last season has been in all respects like the preceding one.

4th. Out of the whole regiment consisting of 800 men, there has not been a single death since February last.

5th. The lines formed for the sepoys are very flimsy, and not at all adapted for such a climate. They are made of reeds thinly plastered over with mud, while the roofs composed of the same slender materials scarcely exceed a couple of inches in thickness. The thermometer in them in the hot weather averages 110° throughout the day, and sometimes is as high as 118° and 120°.

6th. The months during which Sukkur is most unhealthy, are, as I before stated, October and November, but the extreme cold of December and January causes frequent cases of congestive fevers, especially with determination to the lungs.

7th.. The camp has been most judiciously selected, and is pitched on a ridge of limestone hills, 50 to 70 feet above the level of the river. It is thus raised in some degree above the malaria, damp and fog of the drying up bed of the river; and much rheumatism, fever &c. are thereby escaped and much unwholesomeness avoided. After three years experience Sukkur has been found the most healthy spot in the whole of Upper Scinde.

The absence of periodical rain, the very small quantity which falls throughout the year, the very dry state of the atmosphere, the elevated site on which the camp is situated together with an inexhaustible supply of good water, and an abundant supply of excellent food, especially fresh vegetables, which to a sepoy is a matter of the first importance to his general health, all combine to render it healthy. I may remark here, the lunar influences at the phases of the moon are very powerful, producing atmospheric changes most oppressive and depressing to the human constitution, and I have generally observed that to whatever ailments the sufferer may be subject, they are brought prominently out on these occasions. The climate is too hot for European soldiers during six months in the year. It is as much as an officer can exist under with every comfort and convenience which his situation enables him to collect around him.

*Camp, Sukkur*, 10 *November*, 1841.

## Article VI.

*History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment during the monsoon of* 1841, *when quartered in the Colabah barracks, Bombay.* By Arthur S. Thomson M. D. Assistant Surgeon, 14th Light Dragoons, lately 17th Foot.

Presented August, 1842.

Preliminary Remarks. — The 17th Regiment landed at Bombay from the Affghan campaign in March 1840. The Regiment was then divided; one wing was left at Bombay, the other sent to Poona.—In June 1841, the wings which had previously changed stations were united in the barracks at Colabah, until September 1841, when the Head Quarters embarked for Aden. Disease and death became prevalent among the men in June, and on the departure of the Head Quarters for Aden, nearly two hundred men were left sick. The detachment left at Bombay were shortly after, in consequence of the sickness, moved into the Town barracks, and from that, into tents on the esplanade. On the 27th October, 196 sick were embarked for a month's cruise. The detachment remained in tents on the esplanade at Bombay until the end of February, when they marched to Poona. The Head Quarters during their trip to Aden lost several men, and landed there with nearly 50 sick, having embarked without one man in hospital.

*Nature of the monsoon.*—The monsoon of 1841, proved extremely unhealthy at Bombay and over all India. * The following table will show the temperature and quantity of rain which fell during the different months in Bombay.

| Months. | Quantities of Rain in Inches | Average temperature. | | |
|---|---|---|---|---|
| | | Maximum. | Minimum. | Mean. |
| | In. cents. | | | |
| June | 22 62 | 85 | 82 | 83½ |
| July | 19 23 | 83 | 78 | 80 |
| August | 19 81 | 80 | 78 | 79 |
| September | 1 42 | 83 | 78 | 80 |
| October | " " | 86 | 81 | 83½ |
| November | 2 45 | 84 | 76 | 80 |

* *Note by the Secretary.* — This table has been filled in from the records of the European General Hospital. As the sources of radiated and reflected heat

*On the prevalence of fever and other diseases among the men.*

| | | | Total admissions. |
|---|---|---|---|
| In June | 55 fevers were admitted | and 68 other diseases | 123 |
| " July | 136 | 136 | 272 |
| " August | 165 | 80 | 245 |
| " September | 187 | 78 | 268 |
| " October | 375 | 79 | 454 |
| " November | 180 | 112 | 292 |
| " December | 180 | 117 | 297 |
| " January | 50 | 85 | 135 |
| " February | 38 | 53 | 91 |

It will be observed that the number of admissions from fever increased until October, when the large number of 375 cases was admitted. The number of other diseases admitted was comparatively small until the months of November and December, when the effects of the fever caused dysentery, &c.

*The intensity of the fever.* — From June until February both at Aden and Bombay, 1366 cases of fever were admitted of which 58 died, which is about one death for every 23 cases of fever treated. This proportion of deaths among fever cases is very large, 1 death out of every 50, 60, or even 100 admissions of the slight fever which drives soldiers into hospital, is about the average.

*On the influence of the different months on the intensity of fever.*

| | | | | |
|---|---|---|---|---|
| In June | 1 | case of fever died out of every | 8 | admitted. |
| July | 1 | Do. | 27 | " |
| August | 1 | Do. | 12 | " |
| September | 1 | Do. | 17 | " |
| October | 1 | Do. | 20 | " |
| November | 1 | Do. | 90 | " |
| December | 1 | Do. | 180 | " |

The fever was most intense in June, August and September. The extreme intensity of the cases in June, illustrates what is often observed in epidemics, that the cases which occur at first are often the most severe.

*On the duration of the recoveries from fever.* — About 13 and in some stations 8 and 10 days, is about the average length of time soldiers

abound more in the locality of that hospital than in Colabah, the results are probably higher than they would have been, had the observations been made in the hospital at Colabah.

admitted with fever are detained in hospital; but in the present fever the average residence in hospital was different in different months, but every instance exceeding the above average, thus:—

In June the recoveries were on an average 20 days in hospital.
" July ..... Do. ..... 16 ..... Do.
" August ..... Do. ..... 20 ..... Do.
" September ..... Do. ..... 27 ..... Do.

and in October so completely deteriorated were the constitutions of the men, that they were unfit for duty for many months, and even the duration of the cases given in June, July, August and September, is only an approximation to the true duration, as some men, although discharged from hospital, were convalescent in barracks in consequence of the crowded state of the hospital.

*The duration of the fatal cases.* — The following table will show the average age of 58 fatal cases of fever, and their duration during the different months.

| Months. | No. of deaths. | Average age. | Average duration of Sickness. |
|---|---|---|---|
| June | 7 | 28 years | 8 days |
| July | 5 | 23 | 12 |
| August | 13 | 25 | 7 |
| September | 11 | 21 | 13 |
| October | 18 | 21 | 7 |
| Nov. Dec. and Feb. | 4 | 30 | 10 |
| Total Average | 58 | 25½ years | 10 days |

From the above it will be observed, that 7 days was the shortest average duration of the fatal cases, and these cases occurred in August and October. 10 days was the average period in hospital of all the fatal cases; this is scarcely one-half the duration of a register of some fatal fever cases I have got, but which cases were in several instances complicated with organic disease.

Of the 58 fatal cases.

2 Died on the 1st day they were in hospital.
3 ..... do.... 2d day..... ..... do.
1 ..... do.... 3d ..... do.
5 ..... do.... 4th ..... do.
3 ..... do.... 5th ..... do.
9 ..... do.... 6th ..... do.

5 died on the 7th day they were in hospital.
8 ..... do.... 8th ..... do.
4 ..... do.... 9th ..... do.

40 deaths out of 58 occurred therefore before the tenth day the men were in hospital.

It will be seen in the above table that the average age of the fatal cases was 25½ years; this shows that all were not young men, and that on an average most of them had been about 3½ years in India. But the number of young men who died was as great in proportion to the strength as the older soldiers, for out of the 58 deaths, 16 were soldiers under 20 years of age, and therefore just arrived in the country. The fatal cases in June were old men compared to the other months; if the doctrine of seasoning held good, these men ought to have resisted the climate longer than the young men.

*Abstract of two fatal cases of fever.*

Having briefly stated the chief characters of the fever, I shall now insert an abstract of two fatal cases.

*Case 1st.* — Private T. O'Keef, aged 20 years; in India 6 months; admitted 7th October 1841, died 14th October; duration of disease 7 *days*. On admission at Colabah, pulse 118, scarcely perceptible; drowsy, and sinking down in the bed; skin cold and features sunk; tongue moist and furred. Next morning the report was, pulse 126, scarcely perceptible; bowels open with castor oil; skin cool, no pain; great prostration of strength. During the day yesterday indistinct remission of fever, when he had a large dose of quinine *9th October*. Pulse 120, small and feeble; all the characters of sinking of the powers of life. *10th October*. Pulse 110, small and feeble; appears better; took some nourishing soup with difficulty; skin cool. *11th October*. At noon yesterday severe increase of fever; this morning pulse scarcely to be felt or reckoned. 13th no change; is sinking. 14th Expired at 10 A. M.

The treatment consisted on admission of the application of a large blister to the head and neck, hot water to the feet, frictions to the surface and the exhibition of the carbonate of ammonia and other stimulants; whenever the least remission of the fever occurred as on the 8th and 10th, large doses of quinine were given with nourishing soup. Bowels kept open with gentle laxatives.

On examination of the body, serous effusion was found in the ventricles at the base of the brain and along the spinal cord; congestion of blood in the internal organs of the body.

*Case 2d.* Private William Cope, aged 21 years; in India 2 years: duration of disease 4 days; admitted on the 9th October in a state of great prostration of the powers of life, and on being questioned said he had slight headache, but no other complaint; pulse 116. 10th, *October*, slight remission of fever yesterday, when he had a large dose of quinine; it lasted only two hours. Pulse now 126,

very weak ; no headache ; bowels freely open ; severe pain complained of in the abdomen. 12th. Extreme collapse followed the application of 60 leeches to the abdomen, that he almost sunk ; pulse this morning 120 and very small; tongue furred and dry ; skin covered with a cold perspiration. 13th. Pulse intermitting ; occasional delirium; no pain ; skin cold ; as the day advanced he was worse, and expired during the night.

On examination of the body, congestion of blood was found in most of the internal organs, and a large effusion of serum on the base of the brain and along the spinal cord.

The treatment consisted in the application of 120 leeches to the head and abdomen, the continued exhibition of stimulants, quinine, laxatives, calomel and hyoscyamus.

*Remarks on the cases.* — These two cases will give an idea of the nature of the disease : the absence of any thing like a distinct intermission and the great prostration of the vital powers characterized all the fatal cases. If a distinct intermission was observed, large doses of quinine were immediately given, and these cases almost always did well. It will be observed that in both the cases given, congestion of blood was found in the internal organs ; this effect so characteristic of cholera, yellow fever, and almost all diseases which prove rapidly fatal, would lead us to infer, that general bloodletting might have proved beneficial. Depletion tried in some cases, did not succeed, in some cases blood could not be got to flow, and the injurious effect of local depletion was often very obvious. Among the men of the 94th Regiment, who were quartered in the barracks on Butcher's Island, and among whom a fever similar to that in the 17th Regiment occurred, general bleeding was freely tried, and many of the cases proved rapidly fatal. During the months of November and December, the type of fever was so changed, that a small bleeding was very beneficial. In the fever which occurred among the marines of the Endymion, bleeding was highly injurious, and stimulants constantly required. These circumstances are stated, because it is a common opinion, that internal congestion invariably indicates depletion ; this is in a great measure correct, but it is stated by Armstrong that depletion must not be made until a re-action appears, and even then it is dangerous if the vital powers are much depressed. In the present fever, the greater part of the blood in the body was congested in the internal organs ; a very small portion of it kept up the powers of life by circulating, and if this was withdrawn by bleeding the patient would sink :— to show the correctness of these remarks I insert another case.

*Fever case No 3. to illustrate the injurious effect of depletion :—duration of sickness 30 hours.*

Private Thomas Footed, aged 25 years ; in India 2½ years : of a muscular frame ; admitted on the 18th June 1840, with fever of a low type, and with

symptoms of congestion of all the organs, was bled to 16 ounces, and had sixty leeches applied to the head and a blister to the neck; a dose of calomel and antimonial powder and an ounce of wine to be given every second hour.

*On the 29th the report is*, pulse 125, weak; no remission of fever; no sleep; bowels open; respirations frequent and labouring; no irregular sound from lungs: great prostration of strength. A blister was applied to the chest, five grains of calomel and two of opium given, and wine continued every second hour.

4. P. M. 29th. Blister risen well; heart's action and that of lungs increased; pulse 128, small; skin hot and moist; no clammy perspiration.

9. P. M. 29th. Is much worse; pulse scarcely perceptible; had slight delirium; skin covered with cold perspiration. Expired at 10 P. M. on the 29th June.

*Sectio Cadaveris.* Body in good condition and muscular; slight congestion of the lungs and liver; considerable effusion of water on the base of the brain and along the spinal canal.

*Remarks.*—The increased action of the chest and lungs was probably produced by the effusion of water along the spine, preventing some of the nerves of respiration from performing their functions.

In the treatment of all the cases, the object was to excite the powers of life, and when the blood began to circulate, if necessary, to deplete. Many men died from the extreme sinking which followed a paroxysm of fever, and many men recovered from the verge of the grave by wine, soup, &c. I will conclude this section by inserting a recovery from fever.

*Case No 4. Recovery from fever. Severe case.*

Private W. S. aged 22 years; in India 3 years; sanguine habit. Admitted on the 1st July 1840, complaining of general debility, &c. A vein was opened but he fainted before many ounces slowly came, and no more could be got; had an emetic and purgative; he afterwards complained of headache and had 60 leeches applied to the head, and a diaphoretic mixture constantly given. *2d July*, Pulse 84; skin hot and moist; no pain. Continued the diaphoretic mixture. At night occasional delirium; skin moist and hot; bowels open; eyes wild; pulse 124 soft; complains of abdominal pain. A blister was applied to the neck and head, and a draught composed of wine, Tinct Morph. Muriat. and Tartar Emetic given; the head to be rubbed over with strong Tartar Emetic ointment.

3d. Slept a little after draught; pulse 120; skin moist; bowels open; much irregularity in his manner. Diaphoretic mixture and wine every second hour with 40 drops of Tinct. Muriate of Morphia at night.

4th. Pulse 79: skin moist; eruption on head from the antimony; slept none; bowels open; occasional delirium. The wine and diaphoretic mixture continued; at night, 5 grains of Calomel and 5 of Hyoscyamus.

5th. Slept well last night, no fever; pulse 76. 6 grains of Quinine every third hour. *Vespere.* Calomel, Antimony and Hyoscyamus.

6th. Fever with delirium came on yesterday at noon, and has continued since, had 60 leeches to the head, and this morning pulse 109; skin hot and dry; head warm and temples throbbing; 30 leeches applied to the head and diaphoretic mixture given.

7th. The most fearful collapse followed the application of the leeches and the fever; skin covered with cold perspiration and pulse scarcely felt. Brandy and carbonate of Ammonia given every 10 minutes. Had 40 drops of Tincture of Morphia last night and slept well. Pulse 106, this morning; skin cold and clammy; no pain; the brandy and carbonate of Ammonia to be continued.

8th. Strength impaired; Pulse 120: skin hot. Diaphoretic mixture to be given with wine; bowels open.

9th. Pulse 96; skin hot and moist; no pain; occasional delirium.

It is useless to detail this case further, no violent paroxysm of fever occurred again, although there was occasional slight increase of fever. He was convalescent on the 31st July, but was not fit for duty until the 11th September 1840.

*Remarks.* — It was fortunate for this patient that nature resisted further depletion, on admission. During the hot stage of fever, depletion was indicated, but the injurious effect of the leeches was great, and in this case nearly fatal. As the months advanced, leeches could not be used with the freedom done in this case. The anodyne was a doubtful remedy, but the total want of sleep, he stated he had, appeared to indicate it.

*On the causes of the fever,* I am inclined to think, that the cause of the fever assuming the fatal type and extreme prevalence, was in a great measure caused by the barracks at Colabah being totally unfit for European troops during the rainy season, aggravated also by the monsoon of 1841, proving extremely unhealthy; but as no science adopts opinions unsupported by facts so easily as medicine, and as this observation is more peculiarly applicable to the exciting causes of disease, I shall therefore here briefly state the grounds on which this opinion is found.

1st. The barracks at Colabah are built almost on a level with the sea. 2nd. The floor is formed of a deliquescent stone, which in damp weather, is always wet, so that it is impossible for the men to keep their feet dry. 3rd. During the rains the water stagnates round the barracks, there being no proper facility for running it away, so that the ground becomes a perfect marsh. 4th. The sea recedes so far as to expose to the sun half a mile of shore covered with slime and marine vegetation; and as the privies are situated here, the smell is often disagreeable.

In proof of the opinion that the barracks were the chief cause of the fever, the following facts may be brought forward.

1st. I had medical charge of the depot of H. M.'s troops, which men occupy barracks not three hundred yards from the barracks occupied by the 17th Regiment, and only two or three fatal cases of fever occurred out of near 200 men, during the monsoon.

2nd. 20 cases of fever occurred among the Officers of the 17th Re-

giment, the disease had a distinct remission, and was easily checked; no case proved fatal.

3rd. On the removal of the 17th Regiment to the Town barracks, the disease assumed a distinct intermittent type. 4th. A detachment of recruits of the 94th Regiment which were quartered on Butcher's Island, where I am informed the barracks are in some respects similar to those at Colabah, were attacked with an extremely fatal fever, which was checked by their removal into the Town barracks. 5th. The 6th Regiment during the commencement of the monsoon were stationed in the Town barracks, and they lost few men with fever in comparison to what the 17th lost.

Setting aside all these facts: is it to be expected, that men occupying barracks where they cannot walk about without rendering their feet damp could be healthy?

Some may think that intemperance, which is often such a fertile cause of disease in India, may have assisted in producing the severity of the fever; but I am sure that I am right in stating, that in the present case intemperance had little or nothing to do with it, for young men just arrived from England without the means of procuring spirits, were apparently as liable to the disease as the old soldiers: and of men under 20 years of age it is stated that sixteen died.

*On the benefit which resulted from sending the sick to sea.* One hundred and sixty six sick, all of them having suffered under fever, and 12 of them labouring under chronic dysentery, the result of the fever, were embarked on the 27th October, and cruised northward to the Persian Gulf, and arrived at Bombay on the 24th November. During the cruise the weather was pleasant, the lowest temperature was 74 and the highest 86 Fahr.

*On the benefit which resulted to the fever cases.*—The sick embarked emaciated and without appetite, soon began to eat and get strong; almost every man had a paroxysm or two of fever during the cruise, but mild in its nature compared to what they had at Colabah. Thus of the small detachment of healthy men left at Bombay, one man died of fever out of about 100 cases, during the time the sick were at sea. While at sea out of above 200, no case proved fatal, and few cases were severe. On the arrival of the sick at Bombay, 50 men who had been without fever for three weeks during the cruise were discharged, and before a week had elapsed more than two thirds of them returned into hospital with fever.

The embarkation of the Head Quarters for Aden in September and the short sea cruise, had a beneficial influence by changing the type of the fever.

*On the benefit af the sea cruise as a prevention of dysentery following fever.* During the cruise about 20 cases of dysentery occurred among the men; at first I was inclined to think that in this respect the sea cruise had been injurious, but on arrival at Bombay I found that about 21 cases of dysentery had occurred out of the small detachment of comparatively healthy men left there; out of the 50 men discharged on their arrival at Bombay who had scarcely been sick during the whole cruise, many of them were admitted with fever complicated with dysentery. I am therefore inclined to think even with these limited facts, that as a prevention of dysentery, the cruise was beneficial.

Out of the 12 cases of chronic dysentery embarked, three died; none of them received any very obvious benefit from the cruise.

*On the injurious effects of the fever. 1st In producing dysentery.* It will be observed on referring to the statement detailing the prevalence of fever and other diseases during the different months, that in November and December the number of other diseases admitted, increased in a very large proportion compared with the previous months. In October a few cases of dysentery occurred, but when the cold nights of November and December came, dysentery became more prevalent, and 130 cases were admitted during these two months, and 23 died. This large mortality out of 130 cases of dysentery was in some degree produced by the exhausted constitutions of the men not allowing free blood letting, and many of the cases were chronic, in every respect, from the commencement of the disease, the disorganization of the mucous membrane having gone on during the fever.

2nd. *From the liability of the fever to occur again.* The second injurious effect of the fever is the great tendency of the disease to relapse. During the hot season and the early part of the monsoon of 1842, the men who had suffered from the fever in 1841, were liable to be attacked with a paroxysm of fever on the slightest exertion, exposure or excess, and although the disease was slight and did not prove fatal, yet it injured the constitutions of the men and gave a predisposition to dysentery and other organic diseases, and it will take some time, with residence in a good climate, before this liability to fever is entirely eradicated. The men who suffered from the Walcheren fever, laboured long afterwards under its effects, and even at the distance of twenty years, some who had suffered severely had occasional relapses of fever at certain seasons; among the Regiments who had been at Walcheren and who served afterwards in the Peninsula, many of the men were, upon the first exposure to cold and fa-

tigue, rendered unfit for duty so frequently as not to have one-third of the strength fit for service.

## CONCLUDING REMARKS.

It is comparing small things with great, to contrast the epidemic fever which occurred among the 17th Regiment with the fever which proved so fatal to the British army in Walcheren in 1810, but I cannot refrain from doing so, because in India disease and death is so familiar, that nothing is thought of losing fifty or sixty men, while by a reference to a well known fact, the extent of the sickness in the 17th Regiment will be more justly appreciated.

In one of Deputy Inspector Marshall's papers on the statistics of the British Army, I find, that at Walcheren, taking the mortality among all ranks, 10 per cent died by disease and killed, while in the 17th during eight months, eight per cent died from fever and dysentery alone. One man died for every 19 cases of the Walcheren fever treated, while in the 17th one man died from every 23 cases of fever treated. On the 1st February 1810, among the corps which returned to England from the Scheld, 15 per cent were sick; while in the 17th during October between 30 and 40 per cent were sick.

## Article. VII.

*Annual Report of the 2nd Battalion, Bombay Artillery, stationed at Fort George, for the year* 1841. By T. Robson, Esq.

Presented by the Medical Board, May 1842.

The aggregate of cases exhibited in the subjoined * abstract is formed of diseases of a general character, no epidemic nor indeed any peculiarly prevalent disease having appeared during the year.

The aggregate strength at Head Quarters for the whole year was 2892; of this number 722 cases were treated in hospital, which is just 24.96 per

| | | |
|---|---|---|
| * Strength | 113 | |
| Included in the Return on the 31st December, 1841 | | 113 |
| Absent on command beyond the Division | | 232 |
| Total | | 345 |

*Number of Sick.*

| | | |
|---|---|---|
| Remained 31st December 1840 | | 35 |
| Admitted in 1841 | | 687 |
| Discharged | | 671 |
| Died in Hospital | | 21 |
| Remaining 31st December, 1841 | | 30 |
| Average daily number of Sick for the year | | 36* |
| „ Number of Convalescents | | 0 |
| Died without receiving Medical treatment | | 1 |
| Changes since 31st December 1840. | | |
| Recruits joined Artillery | 408 | |
| „ „ Infantry | 791 | 1199 |
| Discharged from the service on account of Disease | | |
| Discharged from the service on account of other causes | | 9 |
| Invalided | | |
| Pensioned | | 11 |

*Prevailing Disease, Dysentery, Fever, Rheumatism.*

cent, or one in every four. Of 722 treated, 21 died, which gives 2.9 per cent, or one in rather more than 34.

By a comparison with the two preceding years, it will be seen that the total amount of sickness was rather less this year, and the proportionate degree of mortality greatly less than the former. The proportion of cases treated to the whole strength in 1839 and 1840, I am unable to exhibit, as I cannot readily obtain the numbers at Head Quarters for those years. But the annexed tabular form will exhibit the decreased rate of mortality during the past year, as compared with the two immediately preceding.

| | No. treated | No. died. | per centage of deaths to No. treated. |
|---|---|---|---|
| 1839 | 787 | 43 | 5.38 or 1 in 18 |
| 1840 | 840 | 58 | 5.95 or 1 in 17 nearly. |
| 1841 | 722 | 21 | 2.9 or 1 in 34 2-5ths. |

Of the above 21 deaths, eight took place in January and the early part of February, previous to my joining the Battalion, and of whom I know nothing, and two patients were transferred in a hopeless condition; one of whom died towards the end of February and the other early in March.

The remaining eleven fatal cases were as follows:—

| | | |
|---|---|---|
| In *April*, Dysentery | 1 | |
| ——— Peritonitis | 1 | 2 |
| *May*, Apoplexy or coup de soleil | 1 | |
| *September*, A recruit for the Infantry who had been ill the whole voyage out with softening of the brain | 1 | |
| ——— Delirium Tremens | 1 | 2 |
| *October*, A worn out man from China, of Cachexia | 1 | |
| *November*, Chronic disorganization of the Liver | 1 | |
| Cachexia and Dropsy in a man from Aden | 1 | |
| Remittent Fever | 1 | |
| Pericarditis | 1 | 4 |
| *December*, Remittent Fever | 1 | |
| Total | 11 | |

Of the eleven it will be seen that four were chronic cases, affording little, if any encouragement from their first arrival, and the case of coup de soleil was of that intensity which proved rapidly fatal in a previously most healthy subject.

The disease which is numerically greatest, is fever. Of remittents and

intermittents combined 123 cases have been treated ; this number gives 17 per cent or $\frac{1}{6}$ of the whole.

*Remittent Fever.* — This disease claims the first notice. The cases have not been numerous but some few have been severe. The worst cases have been such as have presented at the commencement no very strongly marked symptoms, but on the contrary wherein these have been comparatively mild, though unyielding to treatment, and wherein the patients have usually considered themselves to be less seriously ill than the existing symptoms indicated; frequently complaining of languor and weakness rather than of decided illness, and saying that if they could get rid of their thirst and recover their appetite they should be well. In many of these cases the patients have resisted the impressions of disease for three or four days until unable longer to bear up against increasing loss of nervous energy, they have then for the first time presented themselves at hospital.

In such cases the complaint is usually made of general indisposition rather than of any very particular illness ; but the patient's appearance is unfavorable, the features are contracted, and the countenance has a character of depression ; the state of the tongue is various, it may be much loaded, or merely rough, while occasionally it is found quite clean and moist ; there will probably be no headache, but there is urgent thirst, and on taking the wrist it is with surprise the pulse is found to be accelerated to a rate far beyond that which the patient's statement has led one to anticipate. The action of the bowels, it may be, has continued to be regular, and the condition of the urine has commonly not been noticed.

On subjecting such a patient to the usual treatment for mild remittent, the feeling is that of disappointment at the unyielding character of a train of symptoms of no urgent severity, rather than of alarm for any one strongly developed symptom. The existence of headache may continue to be distinctly denied ; there may be no evidence of congestion in, or determination to, any one of the abdominal viscera ; but the fever continues, the remissions become more obscure, and now an inordinate degree of heat about the forehead or vertex may be detected by the hand, while as yet no complaint either of heat or pain in the head has been made by the patient, whose mind appears calm and composed, and intellectual powers remain up to the period undisturbed ; but shortly afterwards he becomes incoherent, muttering and talking to himself, but still answering with correctness when questions are put to him ; the pulse increases in rate and loses strength, indications of cerebral oppression rapidly advance, and the pa-

tient shortly dies. Such is the outline of a form of disease not unfrequently met with, and which the experience of Dr. Davis in Bombay, which was of some years continuance, led him to consider as the endemic of the place; but the fatal tendency of which, marked as it is by a specious mildness of character, may be commonly averted by an active adoption of such means as tend to restore equilibrium to the disturbed balance of the constitution.

But, as distinct from the foregoing, remittent fever has been frequently marked from the commencement by some prominent symptom by which the attention of the most superficial observer would of necessity be arrested. There has been occasionally severe headache, or headache which has been of long continuance prior to seeking advice; or great and distressing irritability of stomach with bilious vomiting; or again so much pain and tenderness in the right side as to leave it for a while a doubt whether the case should be primarily considered remittent fever or acute hepatitis. In these instances the plan of treatment is far more obvious than in those insidious cases to which I have referred above; and will, when vigorously carried out, usually lead the patient to an early favorable result. I was particularly desirous to have laid before the Medical Board the case of James Leonard, which occurred very shortly after I received charge of the medical duties of the Battalion, but unfortunately the case, which was copious and very interesting, cannot be found amongst the old diaries, although they are statedly made up according to their dates; but it appears that one of the evil practices into which the establishment had fallen previous to my joining the Battalion was that of the apprentice boys tearing up old diaries for their own use. Failing to obtain the case of the above named patient, in illustration of my remark, I have subjoined the case of John Flannagan, which is peculiarly interesting on this point; namely, that although during the whole period of his continuance in hospital he made no reference to his side, and careful examination over the liver could not detect any evidence of that organ being in a morbid condition, he returned to hospital a few days after his discharge, and just a fortnight from the period whence he may be considered to have been convalescent, with a well marked case of acute hepatitis, which ran a lengthened course of much severity and detained him in hospital for seven weeks from his re-admission.

*Of Intermittents.* It may be briefly remarked that the prevailing type has been quotidian, and in these cases quinine has manifested its wonted efficacy. I have usually found a scruple given early in the morning in five grain doses for four successive hours, sufficient to arrest the disease; if not the first day of its exhibition very commonly it would do so

on the second. Where the paroxysm has been expected early, so that four hours for the administration of remedy could not be calculated on, I have given three 8 grain doses in consecutive hours with the same success. I have commonly remarked that where the return of the paroxysm has been thus prevented, the patient has experienced copious perspiration continuing through the period during which the attack would probably have lasted, but in other respects has felt well and comfortable.

*Hepatitis acuta.* Of this disease 46 cases have been treated, giving 6-37 per cent or nearly 1 in 16. In every instance since I have been with the Battalion it has yielded to active antiphlogistic treatment, and no fatal case has occurred. The case of Joseph Jones which was severe and possessed great interest, is appended. At one period the indications of suppuration having taken place, were so strong, that I was impressed with a conviction that such was the fact, but the opinion was erroneous and the patient, though rather long ill, completely recovered.

*Dysentery.* Of this disease 61 cases are recorded. This is 8.48 per cent, or about 1-12th of the admissions. From the reports of my predecessors I was led to expect that at the commencement of the cold weather towards the end of the year, dysentery would become prevalent. Surgeon Gray particularly reports upon a very severe form of this disease which prevailed most extensively during the months of October, November, and December, of the year 1839 in which he had charge. It has not, however, been so this year, but on the contrary since the accession of the cold weather the cases of this disease have been few and tractable. During the course of the year some very severe cases have been treated, one of which, (and wherein the patient had a second attack) is appended in illustration.

*Rheumatism.* Although not a fatal, this is nevertheless a very troublesome disease, of which 98 cases stand on record, making rather more than 12 per cent of the total of admissions or 1 in $7\frac{1}{3}$.

*Delirium Tremens.* Of this disease 24 cases have occurred, making 3-3 per cent of the whole or 1-30th of the diseases treated; of the above number one died before I joined the battalion, and one subsequently, making the fatal cases 1-12th of the whole.

But although the effects of intemperate drinking have not been shewn in a greater number of instances in that aggravated form in which they appear in this disease, in a minor degree they are seen in a large proportion of those who are admitted into hospital. Men in the prime of life, of robust frame, and not under the immediate effects of liquor, are found unable to hold the hand steady without the most marked tremors; there is a character of irritability in the pulse unconnected with any ailment the men

may have ; and the tongue is frequently loaded ; exhibiting in the toute ensemble of the man the pernicious effects of the constant stimulation of the system by ardent spirits ; and by which the greater number of diseases are more or less influenced, and always to the disadvantage of the patient. Were it not for the abuse of intoxicating drinks my experience with the artillery in Fort George (limited I allow it to be) leads me to believe they would be as healthy a body of men as any Europeans in the Presidency. In this point of view, therefore, as well as from moral considerations, I cannot but deem the canteen system, which sanctions a man's gulping down twelve ounces of undiluted ardent spirit every day, (a quantity far greater than I have ever seen necessary to be given in the severest form of disease, and which common sense assures us can have none other than a most mischievous effect upon the human constitution) an injudicious system, but little, if at all, calculated to accomplish the end for which it was arranged and is still supported.

In conclusion I would beg leave to draw the attention of the Medical Board to a subject which I believe has on former occasions been laid before them, namely, the seeming inconsistency of denying to the hospital of the 2nd Battalion at the Presidency, which is, in point of fact, a depot hospital, for the accommodation of all * the sick of the Company's European troops, an establishment equal to that which is allotted to the 1st Battalion at an out station, not subject to the contingencies of recruits, unfits, &c. which frequently constitute the majority in the hospital of the 2nd Battalion ; and I would therefore respectfully urge the Medical Board to again bring this subject to the favourable consideration of the Government in the hope of obtaining that which is so much required, namely, a first class establishment for the hospital of the 2nd Battalion.

* The few men of the Staff who go to the European General Hospital, form a trifling exception.

## Article VIII.

*A Letter addressed to the Superintending Surgeon of the Deccan Division, on the use of the Iodide of iron.* By D. Grierson, Esq.

Presented by the Medical Board, May, 1842.

Iodine has been known as a medical agent for about 30 years, yet its introduction into practice has been greatly slower and its use much more limited than its unequalled excellence demanded. Nor has the readiness been evinced to adopt its new forms, which might have been expected. Thus Iodine identified by Dr. Coindet, soon after its discovery by M. Courtois, with a medicinal agent he had previously resorted to with success, was used by him and by others following his example and recommendation eight years on the continent, before it was introducted into Britain by Sir A. Halliday. Ten years more had not sufficed to establish it in general favour when the authenticated facts and observations of M. Lugol sanctioned by the approval of the Academie des Sciences, proved the medicine to be possessed of such power over a class of peculiarly obstinate diseases as no other could lay claim to. Again it may be observed that the forms of the medicine relied on by Lugol are very simple, the metallic preparations being sparingly recommended and chiefly for one class of diseases.

In perfect accordance with the practice elsewhere, has been that in the Honorable Company's service,—only one combination of Iodine, the Hydriodate of Potassa is now at the disposal of executive medical Officers,—and it is with a view to remedy this deficiency, I wish to offer some remarks on another combination,—the Iodide of Iron.

This medicine was made known to the profession in 1834 by Dr. A. Thomson; it has now a place in the London Pharmacopæia; its mode of preparation is stated both in Dr. Thomson's work and in the Pharmacopæia, so that no reference to it is needed. Its medicinal properties are fully stated by Dr. Thomson and accord with my own observation, I shall therefore merely confine myself to a few facts touching my own experience of the remedy.

My first knowledge of the Iodide of Iron was in 1838, when it was prescribed for myself by Professor Carswell. Though the Hydriodate had previously failed, the most immediate beneficial effect followed. I have since used and continue to use the medicine occasionally, and as I believe that I should not have continued able for the performance of my duty without its use, I naturally prize it very highly.

2. A man who was in the Poor's Asylum in Malligaum when I received charge, who had long been an incumbent on the charity, and had undergone treatment for scrophulous swellings of the glands of the neck, and pains, swelling, and stiffness of the joints of the elbows and hands, was treated with the medicine, gradually improved in health from that date, and is now following his occupation of carpenter and gaining his subsistence in the bazar.

3. A young sepoy, of the 15th Regiment N. I. long bed ridden from syphilitic rheumatism and cachexia, and treated with so little benefit that he was put on the invalid list, was, when the Regiment left, transferred to my care while waiting for his discharge. He was put under the use of the Iodide of Iron, improved in health, and becoming impatient, was permitted to proceed to Bombay in the hope that he would again come on the strength of the Regiment.

4. A young sepoy of the 22nd who had fallen into much the same state as the former, and whom I had at one time thought it would be necessary to recommend for discharge, by means of the same medicine, recovered and is now doing duty in the ranks.

5. A young boy of weakly habit had necrosis of the fibula. In due time the dead portion of bone was removed, still no healing followed. After much delay and the use of other medicines without good effect, he began to take the Iodide of Iron and quickly recovered.

6. A sepoy of strong make and healthy appearance being on leave, was attacked with necrosis of the lower jaw. When first seen there was much swelling, fetid discharge and uneasiness. Without any attempt at removing the necrosed portion of bone, he began the use of the Iodide of Iron. Shortly the necrosed bone quite detached was lifted out by the forceps, and the complete recovery was effected much more quickly than I had even hoped.

I have used the medicine in many other cases, but these are the most remarkable; and if they be considered few, I hope it may be borne in mind that the limited field of a native Regiment may have contributed to the result.

It may be difficult to convince any one that the same good result would not have followed the use of the Hydriodate in the cases above mentioned, and imposible to prove it; I decidedly believe they would not, at all, in some of them, and in none of them so quickly. But the medicine has in other respects the superiority over the Hydriodate; it is strongly stimulant and roborant, exciting all the secretions especially those of the mucous membranes; hence it improves the appetite and quickens the alvine discharge, thus beneficially influenciug the whole system. In doses in which it produces its full effect it is followed by no unpleasant symptom. On the other hand the Hydriodate does not produce on the system the beneficial effects of the other, and if pushed to a full dose is apt to disturb the head and cause an unpleasant profuse lachrymation. Besides, the Hydriodate is easily adulterated and has been adulterated in the proportion of 70 to 30; the other combination cannot be adulterated.

Besides cases analogous to those mentioned, there are various other diseases peculiar to the East and of great intractability, in which the Iodide of Iron might, I apprehend, prove of use. Those who have been for some time in the East must be familiar with the names, if no more, of the Bussorah date mark and the Broach or Guzerat boil; latterly too we have become acquainted with Scinde sores, and the neat and graphic memoir of *M. Chedufay has introduced to us the scourge of Yemen, (Plaie de Yemen,) more commonly known as the Aden ulcer. It may probably be known also to many that the bulk of invalids annually transferred to India from the straits of Malacca, consists of those labouring under bad ulcers. In all these instances we have local debility and diseased action of a peculiar kind, resisting ordinary treatment and in most there is also cachexia or general debility. Such are just the cases to which the remedy in question is adapted, and should it, as anticipated, be found adequate to their cure, it will magnify the triumphs of the healing art, extend the benefits medicine has conferred on afflicted humanity, and impart joy to every benevolent mind.

It will be understood that the object of these observations is to induce the Medical Board to take steps to put at the disposal of Executive Medical Officers the Iodide of Iron, and I conclude with respectfully begging to recommend this to be done.†

* Transactions of Medical and Physical Society, No iv.

† *Note by the Secretary* — This preparation, it is believed, is now procurable from the Medical Stores.

## Article IX.

### *A letter on the Fever which prevailed at Bankote in the S. Concan in* 1841, *addressed to the Superintending Surgeon of the Presidency Division.* By T. Waller, Esq.

Presented by the Medical Board January, 1842.

I have the honour to inform you that in compliance with the instructions contained in your official communication of the 6th ultimo, I have seen some of the cases of fever prevailing at Bankote, and now beg to lay before you the following remarks as to its nature and probable cause.

It may be briefly described as an obstinate intermittent, commencing with rigor which lasts for variable periods of from one to twelve hours, generally ending in diaphoresis; the Tertian, and Quartan types mostly prevail; the duration of the fever is uncertain, some patients recovering in a few days, others on the contrary lingering on for months, and in most of the latter, visceral complications are observed, chiefly considerable enlargements of the spleen.

I visited several persons both adults and children, all suffering from the prevailing endemic, they were able to move about, but looked sallow, and thin, with white furred tongues, quick, weak pulses; dry, but not hot skins; and most of them with affections of the spleen, and tumid bellies; five-sixths of the cases are of this nature.

Remittents occur, resembling those generally met with in other parts of the Konkun; in these there is little or no secretion from the skin; and in many cases delirium. They are the most fatal cases, but fortunately the proportion is small when compared with the number of simple intermittents.

I do not believe the fever is contagious, and confess myself unable to point out any cause as certain whereby to account for the continued prevalence of the disease, seeing that hundreds of places very similarly situated, are, comparatively speaking, nearly exempt from fever; at all events, of an endemic character.

It is only within the last three or four years that the disease has been so prevalent, and it is extremely difficult to point out any local cause which

has not been in operation for a much longer period, this it is most important to bear in mind ; the only two exceptions, that occur to my mind, are, the probable increase of population, and the decided growth of large trees in the midst of the town; the latter must, I think, be prejudicial, not only by preventing a free circulation of air, but by the constant fall of decaying leaves, decomposing during, and after, the monsoon ; but then it is right to add, that nearly every Konkun town, is similarly situated ; the increase of population I have no means of accurately ascertaining, but the records of the Collector's office, would no doubt furnish correct data.

Some land formerly under cultivation, by the breaking down of embankments, is now exposed to the action of salt water, but the surface thus acted on, is too small to generate such quantities of noxious miasmata, as would be capable of producing fever.

The gradual enlargement of a very extensive sand bank at the mouth of the river, has been supposed by some, to act prejudicially by retarding the exit of fresh vegetable matter brought down by the Savitree river ; but after actual inspection, I do not imagine it has any baneful influence ; or if any, but in the slightest degree, for the waters are, comparatively speaking, free from any visible admixture, and the bank itself is composed of pure sand, nor is there any noxious effluvia perceptible.

A few miles inland from the opposite bank of the river, the Hubshee's territory is met with, clothed with dense jungle, and presenting a great contrast to that on the Bankote side, which is completely stripped of vegetation ; now the land winds blowing over the former, have, I think, a prejudicial influence, as they lower the temperature very considerably during the night, and towards morning, while the bare naked hills around Bankote becoming highly heated during the day time, tend considerably to increase it, these extremes cannot but be injurious to health, and I think this to be *one* of the most likely causes of the prevailing sickness ; it must, however, be borne in mind, that for four months, when the south-west monsoon prevails (and there are no land winds) that still the same form of fever is met with.

The inhabitants as far as I have examined them, state, that there is no change observable, in the quality of their water, nor in fact are they able to assign any cause for the sickness, but call it simply a visitation of the Almighty ; all classes, whether Mussulmans or Hindoos, suffer alike, both rich and poor.

With the exception of the close proximity of the jungly district to the northward, it must be borne in mind, that all the causes above enumerated, are in operation in almost every Konkun village. The guard of Rutna-

giree Rangers over the treasure, are constantly suffering from fever, here the cause seems more obvious; they are stationed in a small fort completely overgrown with jungly grass and weeds, and an order should be immediately given that these may be burnt or removed.

The village of Vehlass in which fever of an intermittent type at present principally prevails, is embosomed in a dense grove of palms, plaintain, and other fruit trees: the soil is nearly two-thirds pure sand, with one-third of decomposing black vegetable mould. The natives can point out no cause for the fever which has not existed for the last twenty years, but I am of opinion, that a want of due circulation of air, and the accumulation of decomposing vegetable matter, must aid at least, in producing disease.

I beg in conclusion to state that the inhabitants of Bankote, have exerted themselves to a certain extent, and cleared away a great deal of refuse matters from their streets, and a gentleman now on the spot states that the town is, if any thing, cleaner than it was ten years ago.

I am informed that the mortality has considerably diminished, in Bankote, Vashevee, and Vehlass; and the principal form of fever now observed is a tertian intermittent; several of the villages in the Hubshee's district near Bankote suffer also from fever, and of the same form; and this would lead us to infer that the cause is somewhat extended. I have above alluded to the increase of population as a cause of sickness, I think it may act prejudicially by causing a greater crowding of the houses, &c.

I regret that I have not been able to point out with confidence, any *certain* cause of the prevailing endemic, but hope that some little information may be conveyed by the above observations (made on the spot,) which I now do myself the honor to forward, for your information.

*Bankote*, 12th *December*, 1841.

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## Article X.

### *Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases.* By John Peet, Esq.

Presented December, 1842.

It has long been an acknowledged truth that remedies are often eulogized, not so much from a reference to their actual worth, as to the reputation which they acquire, by their apparent success in a few cases ably reported. In like manner a particular mode of treatment sometimes meets with the censure of the profession, and prematurely falls into disrepute, without the causes of its failure being fully understood, or the circumstances influencing its application, sufficiently taken into consideration.

Amongst the remedies, which have thus lost credit, there is none more prominent, than the operation of transfusion, and it is chiefly with the view of endeavouring to ascertain, by an investigation of the recorded cases, whether the now avowed neglect of the practice, is owing to its being really useless, that this short paper is composed.

Nearly two centuries have elapsed since the proposal of re-organizing the system by the adoption of transfusion, was received with the greatest applause. The discovery of the circulation of the blood, had at that time given rise to the most extravagant expectations, and the utility of the remedy was viewed with unexampled credulity. Diseases totally differing in their nature, were hastily submitted to its use; it will consequently, be hardly a matter of surprise that in a very short period, it was entirely discarded. Accordingly we find, from the middle of the 17th, to the beginning of the 19th centuries, with the exception of a few experiments upon animals, instituted in the year 1785, by Dr. Harwood, Professor of Anatomy at Cambridge, no notice is taken of transfusion.

In the early part of the present century, the practice came again under investigation, and about the year 1825, Dr. Blundell clearly demonstrate

that blood might be passed by means of syringe from one animal to another of the same species, without danger or inconvenience to the animal receiving it, or without the blood being seriously injured by its transit through the syringe.

Trials upon the human subject soon followed, and it appears the first successful case of its performance in England, occurred in September 1825.*

There is a marked difference in the practice as then introduced, compared with the mode in which the operation was performed at an earlier period. In all the preceding trials, an artery of an animal, was connected with a vein of the patient, and calves and sheep were usually selected to supply the blood.† Modern Physiological inquries have shown, that, unless the blood be taken from an animal of the same species as the one into which it is to be injected, little, if any, benefit can be expected. Consequently, since this point was clearly proved by a series of experiments, a syringe has been always employed, amd human blood transfused whenever the operation has been tried as a remedial agent.

From the year 1825 up to the present time, I have been able to find recorded, twenty-two successful, and thirteen unsuccessful cases.

Of the successful cases: there was one of Hæmorrhage following the operation for strabismus; one of Hæmorrhage during the amputation of the thigh, and one of Hæmorrhage from the bursting of the vena saphena. There were two cases of collapse arising from excessive Menorrhagia. Six cases of hæmorrhage before, and eleven of Hæmorrhage after delivery.

The unsuccessful cases are of a more diversified nature; they are shown in the following table.

*Table No. I.*

| | Number. | Nature of Cases. |
|---|---|---|
| | 1 | Hæmorrhage following compound fracture of leg. |
| | 1 | Hæmorrhage following amputation of thigh, the external iliac having been tied before transfusion was adopted. |
| | 1 | Hæmorrhage from the bursting of an artery. |
| | 1 | Collapse produced by large bleedings during an attack of Puerperal fever. |
| | 1 | Incipient Hydrophobia |
| | 1 | A child in a state of asphyxia removed from the mother by the Cæsarean section. |
| | 1 | Hæmorrhage following amputation at shoulder joint. |
| | 1 | Hæmorrhage after expulsion of Placenta. |
| | 1 | Hæmorrhage during the birth of Placenta. |
| | 1 | Hæmorrhage during the birth of Placenta. |
| | 2 | Hæmorrhage both before and after the birth of Placenta. |
| | 1 | Hæmorrhage from Placental presentation. |
| Total | 13 | |

* Lancet, 17th September, 1825.

† Cyclopedia of Medicine, article Transfusion by Dr. Kay

From this table it will be seen that there were only seven cases of Hæmorrhage alone, the remaining six having various complications.

* In the 1st case, viz. of Hæmorrhage following compound fracture of the leg, the stump was found after death in a state of gangrene. Transfusion was twice adopted, and was at first productive of considerable re-action.

† The 2nd case occurred in a child eight years of age. Amputation was performed for extensive Necrosis of the Femur. Secondary Hæmorrhage took place on the eighth day. It was at first stopped by compression, but it subsequently returned, when the external iliac was tied. He rallied for about an hour after the transfusion, and then rapidly sunk.

‡ In the 3rd case, the patient had ceased to respire, three or four minutes before the operation was performed.

§ The 4th case was one, in which the woman was evidently sinking. No decisive effect was produced.

‖ In the 5th case, the patient had been bitten four weeks previously. There was some diminution in the dread of fluids after the injection, but the relief was very transient.

¶ In the 6th case, about two ounces of venous blood were injected into the umbilical vein. Some movements in the face followed.

** In the 7th case, the subclavian artery had been twice tied, without stopping the bleeding. Sixteen ounces of blood were transfused. It is remarked that the blood had scarcely reached the heart, when the patient was seized with a fit of suffocation, and immediately died.

†† In the 8th case, the woman had ceased to respire five minutes before the performance of the operation.

‡‡ In the 9th case, the patient was evidently sinking, but more than four ounces could not be obtained from the lady, who offered to supply the blood.

* Mr. Green, Lancet, October 12th, 1829.

† Medical Gazette, April 24th, 1840. Report of cases in the Edinburgh Royal Infirmary.

‡ Blundell's Physiological Researches.

§ Blundell's Physiological Researches.

‖ Dr. Blundell, Lancet, November 22nd, 1828.

¶ Lancet, November 22nd, 1828. Dr. Dieffenbach.

** Lancet, December 4th, 1830. M. Roux.

†† Blundell's Physiological Researches.

‡‡ Blundell's Physiological Researches

* The 10th case, appeared to fail, owing to the small size of the syringe which had to be refilled sixteen times. The injection was made into the external jugular vein, and after death a small quantity of air was found in the right side of the heart.

In all these cases there were either complications, or the want of success may be attributed to the mode of performing the operation. In the remaining three however, the causes of failure are not so obvious; they will be discussed in another place.

The following table will shew the length of time, which elapsed, between the cessation of the bleeding, and the commencement of the operation, in thirteen successful, and five unsuccessful cases.

*Table No. II.*

| | Successful cases. | | Unsuccessful cases. | |
|---|---|---|---|---|
| | Number of cases. | hours. | Number of cases. | hours. |
| | 1 | ½ | 1 | 3 |
| | 2 | 1½ | 1 | 5 |
| | 2 | 2 | 1 | 6 |
| | 2 | 3 | 1 | 10 |
| | 2 | 4 | 1 | 72 |
| | 1 | 4½ | | |
| | 1 | 6 | 5 | Total. |
| | 2 | 11 | | |
| Total. | 13 | | | |

In tables No. III and IV the state of the different functions is mentioned, in all those instances where this information could be correctly obtained.

*Table No. III.*

Successful cases.

| Number of Case | Circulation. | Number of case. | Respiration. | Number of case. | Nervous system. |
|---|---|---|---|---|---|
| 1 | Pulse 120 and at times imperceptible. | 2 | Hurried and attended with sighing. | 1 | Great restlessness with frequent syncope. |
| 1 | Pulse had been imperceptible at wrist and carotids for 2½ hours. | 1 | Short and hurried. | 1 | Complete syncope, urine and fæces, passed involuntarily. |
| 1 | Scarcely perceptible, 140 thready and small. | 1 | Thoracic and slightly sterterous. | 1 | Impossibility of deglutition or articulation. |
| 1 | Fluttering and occasionally not to be felt. | 1 | Rapid and embarrassed; breath cold. | 3 | Great restlessness. |
| 2 | Pulse at wrist and carotids not to be felt. | | Difficult with a sound of air passing through mucus. | 3 | Perfect insensibility. |
| 2 | Pulse at times imperceptible. | | | 1 | Jactitation. |
| 4 | Pulse not perceptible. | | | 2 | Vomiting. |
| 6 | Barely perceptible. | | | | |

* London Medical and Physical Journal, August 1826.

*Table No. IV.*

Unsuccessful cases.

| Number of case. | Circulation. | Number of case. | Respiration. | Number of case. | Nervous system. |
|---|---|---|---|---|---|
| 2 | Pulse scarcely perceptible. | 1 | Breathing quick and short. | 1 | Faintness and at times insensibility. |
| 1 | Pulse slow, and intermitting, with two quick pulsations, full and sharp. | 1 | Greatly hurried. | 1 | Great restlessness and jactitation. |
| | | 1 | Difficult. | 1 | Delirium. |
| 1 | Pulse weak and fluttering; often imperceptible. | | | 1 | Extreme restlessness; loss of the power of swallowing. |
| | | | | 1 | Restlessness. |
| 1 | Pulse perceptible only at intervals. | | | 1 | Extreme collapse and jactitation. |
| 1 | Pulse imperceptible at wrist. | | | 1 | Talked incoherently; slight convulsive twitches. |

1 The woman had ceased to respire five minutes before the operation was performed.
1 The woman, had ceased to respire three or four minutes.
1 Evidently sinking
1 This woman was in that state which as "men of observation know, is the certain precursor of death."
1 Extreme collapse; symptoms of pleuritis.

The quantity of blood transfused, of course varied in the different cases. It is shown in the following table.

*Table No. V.*

| Successful cases. | | Unsuccessful cases. | | | Successful cases. | | Unsuccessful cases. | |
|---|---|---|---|---|---|---|---|---|
| Number of cases. | Quantity. | Number of cases. | Quantity. | | Number of cases. | Quantity. | Number of cases. | Quantity. |
| | oz. | | oz. | | | oz. | | oz. |
| 2 | 2 | 1 | 2 | | 2 | 8 | 1 | 18 |
| 2 | 4 | 1 | 4 | | 1 | 9 | 1 | 29 |
| 1 | 5 | 3 | 6 | | 1 | 10 or 11 | — | |
| 1 | 5½ | | | | 2 | 12 | 13 | Total. |
| 2 | 6 | 1 | 8 or 10 | | 2 | 14 | | |
| 2 | 6½ | 1 | 10 | | 1 | 22 | | |
| 1 | 6 or 7 | 1 | 14 | | 1 | 24½ | | |
| 1 | 7 or 8 | 3 | 16 | | — | | | |
| | | | | Total. | 22 | | | |

Thus it will be seen, that the largest quantity of blood transfused in 22 successful cases, was 24½ oz. the smallest 2 oz. The average in this number of cases appears to be a little more than 8 oz.

In the unsuccessful cases, the largest quantity injected, was 29 oz., the smallest 2 oz. The average about 12 oz.

The quantity necessary to affect the system will be seen in table No. VI., consisting of 15 cases.

*Table No. VI.*

| | Number of cases. | Quantity. |
|---|---|---|
| | | oz. |
| | 4 | 2 |
| | 1 | 3½ |
| | 4 | 4 |
| | 3 | 6 |
| | 2 | 8 |
| | 1 | 12 |
| Total | 15 | |

The immediate effect of transfusion upon the different functions is a point of considerable interest. We should á priori expect the circulating and nervous systems, to be much influenced, which experience confirms.

The first sensible alteration is generally in the pulse. From being weak, quick, and in some cases imperceptible, it becomes slower and more distinct.

* There is one curious case recorded by Dr. Ingleby, where the pulse was not perceptible in the arm into which the injection had been made, for several hours after the operation.

† Occasionally a slight intermission is observed; this appears to have occurred in one case, when only four ounces of blood had been transfused.

In experiments upon animals, I have found, that the action of the heart is sometimes much increased, and attended with more or less irregularity. By proceeding with the injection more gradually, this unfavorable symptom has generally subsided.

The diminution in the frequency of the pulse is often very marked; in some instances rapidly falling from 130 or 40, to little more than 100 beats in the minute.

The respiration is very quickly affected; the breath becomes warm, and the breathing slower and less laborious.

The effect of transfusion upon the nervous system, is equally well developed.

In several instances sensibility and speech, which had been previously quite lost, were almost immediately restored, and the patients who had been but a short time before, in a state of perfect unconsciousness, sat up and

* Practical Treatise on Uterine Hæmorrhage.

† Lancet, Sept. 17, 1825.

spoke. Occasionally a degree of restlessness is produced. This occurred in the case (before alluded to) in which the pulse intermitted.

* In one case after four ounces had been injected, there was an approach to syncope, the pulse fell, and there was sighing, with efforts to vomit. These symptoms ceased after the expiration of a few minutes.

Vomiting occurred in one case during the operation, but this may have been rather one of the symptoms resulting from the Hæmorrhage, than the effect of the transfusion.

The phenomena now mentioned, are those which have been found to attend the operation in some of the cases, where it has been successfully performed.

From the number of unsuccessful cases, there are two instances in which it was thought to have hastened death, one has been already alluded to as recorded by M. Roux, the other will be presently discussed.

In M. Roux's case, it appears the blood had scarcely reached the heart when the patient died by suffocation.

† In one other instance, slight sickness occurred, and towards the end of the operation, there was an irresistible desire to change posture.

The post mortem appearances where the operation has been unsuccessfully tried, have not been often described.

‡ In one case a small quantity of air was found in the right side of the heart.

§ Dr. Collins observed, that the right auricle was distended with fluid blood, the other cavities of that organ were empty; the injected blood appearing to have passed no farther than the right side.

Having given an outline of the cases which are recorded, the question now presents itself as to whether they are sufficient in number to prove the utility of the practice.

It will be remembered that there are twenty-two successful cases, brought under notice; it is not improbable, there may be some few others, which have escaped my observation. The unsuccessful on the other hand, only amount to thirteen, and it has been already mentioned, that there are only three in which the failure is not owing, either to the peculiar nature of the case, or to the mode of performing the operation. Provided these are all the instances where transfusion has been adopted without success, the proportion is

* Mr. Jewell, London Medical Journal, October, 1825.
† London Medical and Physical Journal, August, 1826.
‡ Mr. Jewell, London Medical Journal, October, 1825.
§ Practical Treatise on Midwifery.

decidedly in favor of the practice, but I am not unaware, that the custom which unfortunately prevails of withholding unsuccessful cases, whilst those of a different kind are eagerly brought forward, will render any argument founded upon the relative proportion of those reported, of little importance.

A better and more correct inference may perhaps be deduced, from a consideration of the symptoms, and the state into which the patient is reduced before the operation, assisted by the evidence which is afforded, by the effect of transfusion in producing reaction. In order to make this point as clear as possible, I will give a short account of some of the more severe cases, in which the practice was successfully adopted.

Case No. I.—Reported by Mr. Brown in the London Medical Journal, for February 1827. A woman aged 30, attacked with Hæmorrhage before the expulsion of the placenta continuing for a few minutes. The injection was made about two hours after the cessation of the bleeding; the usual stimulants, viz. brandy, camphor, æther, &c. having been previously given. The pulse was neither to be felt at the wrist, nor in the carotids. The respiration was hurried, thoracic, and slightly sterterous, and the countenance was deathlike, with coldness of the surface. The eyes were closed and the pupils fully dilated. There was perfect insensibility. Six ounces and a half of venous blood were transfused: after 13drms. there was no change. Five minutes were allowed to elapse when 15drms. were injected. The pulse could then be felt at the wrist, and the respiration became more free; after five ounces had been introduced, the pulse was 120 and regular; there was slight sensibility upon touching the cornea, and the pupils acted upon exposure to light. At the termination of the operation the pulse was 120 and equable, and there was some restlessness.

In one hour and ten minutes, from the commencement of the transfusion, she noticed all around her and spoke with a firm and distinct voice. She subsequently suffered a good deal from febrile disturbance, but the reaction was permanent. The blood was transfused at four different times, and five or ten minutes allowed to elapse between each injection. Between the 3rd and 4th injection half an ounce of brandy was given.

Case No. II.—Reported by Mr. Furner in the Medical Gazette, for July 4th, 1835. A woman aged 37, whose thigh was amputated for medullary sarcoma of the knee. There was considerable Hæmorrhage during the operation, producing a state of alarming collapse. The usual remedies were given without effect, and the operation performed almost immediately. The pulse was imperceptible both at the wrists, and in the carotids.

and there were other symptoms of extreme collapse. Five ounces of blood were transfused. In the space of a minute or two pulsation gradually returned, and the skin became warm and less clammy. Further stimulants were not required. No unfavourable symptoms occurred, and the stump healed in five weeks.

Case No. III.—Recorded by Dr. Oliver, in the Edinburgh Medical and Surgical Journal for October 1842. A woman aged 42, attacked by Hæmorrhage after delivery, continuing for some time without any effectual means being used for its suppression. Transfusion was adopted about eleven hours after the cessation of the bleeding, the usual stimulants having been administered in the interval. The pulse had neither been perceptible at the wrist, nor in the carotids for two hours and a half. There was perfect coma, and the surface was blanched. About twenty-two ounces of blood were transfused. Until twelve ounces had been introduced there was no change; the pulse then became perceptible. After twenty-two ounces the restoration was complete, there was a return of consciousness, as well as of speech. No unfavorable symptoms following the operation are mentioned, and it does not appear that any further stimulants were necessary.

The collapse in these three cases was exceedingly great, and in the third case it is interesting to observe, that no amendment took place, until a large quantity of blood (twelve ounces) had been injected. It is said, this patient had none of the more prominent, and distressing symptoms, which so frequently follow large bleedings.

By referring to table No. III. it will be seen, that from amongst the remaining nineteen cases, there were several in which the pulse had entirely left the wrist, whilst in others it was only occasionally imperceptible, and in some it was distinct.

It is generally considered as one of the strongest arguments, adduced by those who deny the efficacy of this practice, that it is impossible to distinguish the cases of collapse which are recoverable by the ordinary remedies, from those which would be necessarily fatal; and it has been not unfrequently said, those instances in which the operation is reported to have succeeded, would have been restored by nature, or the means usually employed for producing reaction. That in some of the recorded cases there is a foundation for this assertion, appears probable, as for instance, when the pulse was tolerably distinct, but that it is generally applicable to the operation of transfusion, is, I think, incorrect; and in the three cases an account of which has just been given, it would betray a degree of scepticism to deny that transfusion had saved life.

If it be asserted, there are no phenomena resulting from excessive Hæmorrhage, which denote a fatal termination, it will be impossible to come to any satisfactory conclusion upon the subject of transfusion, as it may be said of every case, in which the practice appears to succeed, that it would have recovered without it. If on the other hand, it be admitted, that a class of symptoms may be induced, constituting a case of such danger, that restoration cannot be effected by the measures generally adopted, it appears to me, the three which have just been mentioned, are unquestionably of this kind.

The conclusion I would venture to draw from a consideration of these cases, is, that transfusion has succeeded in producing reaction, when death would have been the inevitable result, had the usual stimulants been alone given.

Proceeding in the inquiry, I will now advert to the three cases before alluded to, in which the operation failed.

Case No. I. Recorded by Dr. Collins in his Practical Treatise on Midwifery. Hæmorrhage occurring after delivery before the expulsion of the placenta. It was calculated only two pints of blood were lost. The usual stimulants were administered, and heat applied for ten hours after the cessation of the bleeding. The pulse was weak and fluttering, often imperceptible, with difficult respiration. There was extreme restlessness, and loss of the power of swallowing. Ten ounces of blood were transfused. The patient died a few minutes after the performance of the operation. Dr. Collins remarks, that the injection did not appear to have any more marked effect, than that of occasioning indistinct muttering.

Case No. II. Also recorded by Dr. Collins in his Practical Treatise on Midwifery. Hæmorrhage, both before and after the removal of the placenta, occurring in a woman thirty years of age; stimulants were used, heat applied, and the operation performed three hours after the bleeding had stopped. The pulse was perceptible only at intervals; there was restlessness, and the extremities were cold. From eight to ten ounces of blood were injected. No effect was produced, and death occurred a few minutes after the operation.

Case No. III. Reported by Dr. Ashwell in Guy's Hospital Reports Vol. IV. 1837. Hæmorrhage from placental presentation occurring three times before delivery, the child being removed by turning. There were the usual symptoms of extreme collapse. The injection was made twenty-four hours after delivery, but three days subsequent to the last gush of blood;

Note.—It was thought, death was rather accelerated by the transfusion

seven ounces were at that time transfused. The amendment was very marked. The pulse became full and distinct, she spoke rationally, and the eyes regained their natural expression. In less than an hour, however, the collapse returned, when seven ounces more blood were injected. Reaction was produced, but not to the same extent as before. She rapidly sunk, and died very shortly after the second transfusion.

In these three cases, the operation seems to have failed, without the cause being very obvious.

The first of Dr. Collins' cases, is singular, inasmuch as the patient had only lost two pints of blood ; an amount not larger than sometimes attends what are considered natural labors. In Dr. Ashwell's case, the failure appears marked, but it must be borne in mind, that the first injection was not made, until seventy-two hours after the Hæmorrhage had ceased. A length of time sufficient to allow of a serious change being induced in a vital organ.

It would be extremely difficult to offer any satisfactory explanation of the want of success, attending the adoption of the practice in these three instances. I may, however, remark, that Dr. Collins' cases differ from many of those reported, in the rapidity with which death appears to have followed the injection. Dr. Collins has not decidedly asserted, that death was hastened by the operation; and yet, as the patients died a few minutes after it was performed, it must be, I think clear, either that the injection had a positively injurious action upon the system, or that the collapse had proceeded to an almost unusual extent. In the latter case it would not be an unfair inference to suppose, the failure may be possibly owing to this cause.

In support of the supposition, that the introduction of the blood, had acted deleteriously, there is the case recorded by M. Roux ; but this is the only instance I have been able to find where such an effect is attributed to it. In the greater number of cases, where the respiration had not entirely ceased, more or less reaction followed the injection ; and even in the few instances in which no favorable symptoms succeeded, it does not appear that any injurious effects were supposed to attend the adoption of the practice.

Mr. Roux's case was one of an exceedingly complicated nature, and may therefore be left out of the discussion; and as this is the only one which supports the view that the transfusion acted injuriously, it would be more reasonable to conclude, that in those recorded by Dr. Collins, the great extent to which the collapse had proceeded before the operation, may be in some measure the cause of its failure.

Whilst transfusion is viewed as a desperate measure, only to be used as a last resource, the unfavorable cases must frequently have this argument in their favor.

*General remarks.* Having endeavoured to arrange all the evidence, which is afforded by the recorded cases, both in favor of, and against the utility of transfusion, I may now perhaps be permitted to make a few general remarks upon the subject.

1st. As to the nature of the cases in which transfusion is justifiable. Various states of the system unconnected with the effects of Hæmorrhage, viz. Hydrophobia, Asphyxia, Cholera, &c., have been submitted to this mode of treatment, but not with such success as to entitle them to consideration.

The collapse most frequently requiring transfusion, will be of course that, which is occasioned by Hæmorrhage during parturition; but it will be seen by referring to table No. III. there are two successful instances of its performance, in cases of bleeding from other causes.

The most favorable cases will be those, where there is a sudden eruption of blood from the uterus, followed by a state of extreme collapse.. It is often remarked that although the Hæmorrhage may cease, the collapse will increase, notwithstanding the assiduous use of the most powerful stimulants.

It has occurred to me to be present at two cases of uterine Hæmorrhage which had a fatal termination ; in one death took place in four, in the other in ten hours, after the bleeding had stopped.

2. With respect to the length of time the collapse may continue, without transfusion losing its power of restoring the patient.

Dr. Blundell states that he succeeded in restoring an animal five minutes after apparent death from bleeding, but if a longer period were allowed to elapse, in no case could the animal be resuscitated.

I have repeated Dr. Blundell's experiments upon this point, but without being able to arrive at the same result. I never could succeed in recovering an animal after the function of respiration had been entirely suspended, although I varied the experiments, by injecting fluid into the arterial as well as venous systems.

I will not presume to place my negative experiments in opposition to the positive ones of Dr. Blundell ; but I may perhaps be allowed to mention, that there does not appear to be any instance of reaction in the human subject, following the performance of the operation, when the patients had been in a state of apparent death, although there are three, in which it was tried.

3rd. With regard to the nature of the injected fluid.

Owing to the occasional difficulty of procuring a supply of blood at the moment it is required, as well as to the obstacle, which its rapid coagulation offers to the successful adoption of the practice, it has been considered a desideratum, to find some fluid which might be substituted. Accordingly experiments have been made with water, saline solutions, and the blood of animals; but it has been clearly shewn, that although reaction to a certain extent is produced by them, the effect is very transient.

* Within the last few years, some very interesting facts upon this part of the subject, have been made out, by Prevost and Dumas, Dieffenbach, and more recently by Dr. Bischoff. They all agree, that blood deprived of its fibrine does not lose its vivifying power, and according to Dr. Bischoff, when thus modified, it may be injected from mammalia into birds, without ill effects, whereas if blood from which this constituent is not removed, be used, the bird almost immediately dies with the most violent symptoms of poisoning. But it is a curious circumstance, that although the serum and red particles, may be transmitted from one animal, to another of a different species without bad consequences, yet they have not the power of causing reaction after dangerous bleedings, but if used upon an animal of the same species, blood thus modified will answer all the purposes of transfusion.

In order to make myself certain whether blood deprived of its fibrine may be substituted for that fluid in its natural state, I instituted the following experiment.

At 8 A. M. of the 27th May, 1841, assisted by my friend Mr. Sibson resident Surgeon to the Nottingham General Hospital, I laid bare the carotid of a middle sized full grown dog. Having introduced a tube, the blood flowed very freely until ten ounces had escaped. The animal appeared greatly distressed; the pulse in the leg became perfectly imperceptible, and the action of the heart exceedingly weak. The respiration was at first remarkably quick, but afterwards slow, deep, and sonorous, with coldness of the breath and surface; frequent convulsive attacks supervened, attended with the passage of the urine and fœces. The femoral artery of a second dog was opened at the same time as the carotid of the first, and the blood stirred for a few minutes, so as to remove the fibrine. Six ounces of the serum and red particles were slowly injected into the external jugular vein at three syringes full. After two ounces had been transfused, there was slight quivering of the muscles (a sort of shuddering) and the circulation and respiration appeared much disturbed. A few minutes were allowed to elapse,

* Muller's Physiology, translated by Dr. Baly.

when one ounce was injected ; the pulse in the leg could then be felt ; the respiration became less laborious, and the surface partly recovered its natural temperature. After six ounces had been injected, the animal sat up, and when spoken to, endeavoured to stand. At the end of an hour, there was no threatening of returning collapse. The dog was killed by injecting air into the veins.

To obviate the objection which might be raised, that the animal was not allowed to live a sufficient time to prove whether the reaction would be permanent, I repeated the experiment, keeping the dog alive for twenty-four hours, when he seemed to be only suffering from the shock of the operation.

It would therefore appear, that blood from which the fibrine is separated, answers equally as well in producing reaction, as before this constituent is removed. As the facility of performing the operation by this means is much increased, it would be probably better, in all cases, that the serum and red particles, should be alone injected.

4th A question has been raised, as to whether the blood should be introduced into the venous or arterial systems.

Dr. Blundell thought it would be perhaps better in apparent death, to inject it into the carotid in a retrograde direction, so as to fill the coronary arteries, as it has been thought upon their distension the irritability of the heart may in some measure depend.

The following experiments were made with this view.

Experiment 1st. On the 21st of January 1841, I opened the right carotid of a full grown mongrel dog. The blood flowed very freely for three minutes, then more slowly, and subsequently there was merely a slight oozing.

At forty-three minutes after the opening of the artery, respiration entirely ceased. I immediately introduced a tube into the carotid and injected water at a temperature of 102° F. in a retrograde direction. This was followed by a quivering of the muscles of the abdomen, and of those about the mouth, which soon ceased; in two or three minutes it returned, and became more general, for the space of a minute. It then entirely subsided.

Artificial respiration was now commenced. When about twelve ounces of water had been thrown in, the injection was discontinued. The artificial respiration was kept up for more than an hour, but without producing any additional signs of returning life.

Upon examining the animal a few hours after death, the right side of

the heart, was filled with coagula and water, the venæ cavæ were also distended; the left side of the heart and pulmonary artery were empty.

The fluid had evidently made the entire circuit of the vessels, as it was found in the right side of the heart, after being introduced into the carotid. It appears to have been there arrested.

Experiment II. On the 20th January 1840, a tube was introduced into the carotid of a large bull terrier; the blood as it flowed was received into a vessel, and stirred so as to remove the fibrine.

The usual symptoms of excessive Hæmorrhage were very quickly produced, and at ten minutes after the opening of the artery respiration ceased.

I slowly injected into the carotid artery in a retrograde direction, six ounces of the blood, deprived of its fibrine, which had been previously removed from the vessels, artificial respiration being at the same time performed. There was no appearance of returning life.

Experiment III. On the 12th June 1841, having introduced a tube into the right carotid of a small sized mongrel bull terrier, the animal was allowed to bleed until respiration had entirely ceased. A small quantity of a saline solution (1 oz.) consisting of the carbonate and muriate of soda, was carefully injected into the carotid artery in a retrograde direction. This was followed by the occurrence of several full and deep inspirations, together with irregular twitchings of the muscles about the mouth, which almost immediately ceased. About four ounces of blood deprived of its fibrine, were now slowly transfused into the external jugular vein, but without producing any appearance of returning life. The injection of the saline solution into the carotid was repeated. No respiratory movement followed. Artificial respiration was not performed in this experiment.

The conclusions to be drawn from these experiments are rather opposed to the view entertained by Dr. Blundell, but they are not sufficiently numerous to set the point at rest.

If it were proved, that blood introduced into the carotid, and transfused in a retrograde direction would answer any good purpose, there are cases where it might be tried, as for instance when this vessel is divided in cases of suicide or by violence. Here there would be no great difficulty, in introducing an instrument into the vessel, and injecting in this direction.

As to the advantage which this mode of proceedure, would have in cases where respiration had not ceased, over the usual practice of opening a vein, there are no facts to determine.

5th. As to the quantity of blood which should be transfused.

This of course, it is impossible to calculate. In some instances it

appears by a reference to table No. V. that a very small quantity (2oz.) was sufficient, whilst in other, ten, twelve, and even twenty two ounces, were required.

In those cases where headache, intermitting pulse or restlessness occurred after a moderate quantity of blood had been injected, the operation was mostly discontinued.

In addition to the objections against the adoption of Transfusion which have already been mentioned, there are some others to which I will allude.

1st. The danger of Phlebitis, arising from the irritation to which the vein is subjected by the introduction of a tube, has always been considered a strong objection.

I have however been unable to find one fatal instance of this disease following Transfusion: occasionally symptoms of Phlebitis supervened, but they always subsided under the use of the usual remedies.

2nd. The probability of the admission of air is also brought forward, as an objection. But this danger would appear to be overrated.

Dr. Blundell injected five drs. of air into the jugular vein of a dog without causing death.

*Nysten* has also proved that small quantities of air are rapidly absorbed.

It is therefore clear, that a few air bubbles would not be productive of ill consequences, and if it be taken into consideration, that when the operation is properly conducted, even this small quantity will be excluded, but little stress can be placed upon this objection.

The strongest objection, and in fact the only one entitled to serious consideration, is the assertion that Transfusion has not the power of causing reaction.

The present inquiry has been chiefly directed to an investigation of this point, so far as such an object can be attained by a reference to recorded cases. How far I have succeeded, in arranging the evidence for the elucidation of the question, it is not for me to say.

I have purposely avoided alluding to the injection of saline and other solutions in cholera,(a point of considerable local interest) as the limits of this communication will not allow of its being fully discussed; should a paper upon this subject in continuation of the present one be deemed worthy the notice of the Society, I shall be happy to furnish it upon a future occasion.

## Article. XI.

*Medico-Historical Abstract of the 1st year's service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons, at Kirkee, under the Bombay Presidency.* By J. W. Moffat, Esq., Surgeon H. M.'s 14th Light Dragoons.

Presented, December 1842.

Her Majesty's 14th Regiment of Light Dragoons hastily augmented from 334 to 501 strong, exclusive of the details left at Maidstone in Kent, for the purposes of a Depôt, recruiting, &c., embarked at Gravesend, on the Thames, in two divisions. The Head Quarters and Right Division, 337 strong, under Lieutenant Colonel John Townsend, on board the Repulse, Reid, Commander, on the 24th May; and the Left Division, 164 strong, under Major Charles Barton, on board the Reliance, Green, Commander, on the 17th June 1841; and arrived in Bombay harbour, the Right Division, reduced by the occurrence of one casualty during the voyage, on the 6th September, and the Left Division, on the 2nd October, following. The troops remained on ship-board in the harbour for three days; their landing being interdicted, and their communications and dealings with those on shore limited, till the tents, equipage, and stores, for the short march in view, and directed to take place with the least possible delay, were provided; when the Regiment disembarked in boats at Panwell, and reached its destined station, Kirkee; the Right Division on the 19th September, and the Left Division on the 13th. October, 1841. Here the Regiment was augmented further by the transfer from the 4th Regiment of Light Dragoons, under orders to return to England, of 150 volunteers, disposed to extend their Indian service, who were incorporated on the 1st October.

Considerable experience warrants the propriety of securing to a European Regiment, for the first year at least of its tropical service, the advantage of a residence at Poona, or elsewhere in the country above the Ghauts, where the climate is 10° lower than on the coast, and the air pure,

buoyant, and comparatively dry; and the East India Company's Government have established an extensive depôt at the former place to which all their recruits on arrival at Bombay forthwith proceed.

From the ship the Regiment was transported in open boats across an arm of the sea and by a small river to Panwell, a large straggling village, a few miles inland, at the distance of some twenty miles, to which the tide ascends. Short as is the distance, this passage is often not effected under twenty-four hours, or two tides from the clumsiness and overladen state of the boats. It becomes then necessary that a day's rations should be furnished, good water provided, and that the boats should be protected by awnings from the midday sun and night dews. The low marshy confined position of Panwell renders it any thing but a desirable point for disembarkation, and offers few good encamping sites, especially during the wet season. The consequence has been the production of fever and bowel complaints, and too often, the prevalence of a destructive cholera among the troops who have been unfortunately detained many days there. At the time of the Regiment's landing, although there had been a favorable break in the season, yet the ground was very damp, and the occupation of the tents not a little hazardous. The want of a large shed protected to windward with a good roof and raised floor for the accommodation of the troops so frequently arriving at this thoroughfare, which would add so much to their comfort and safety, was much felt, and the occasion served for enforcing what others had previously recommended,—the economy and advantage of such a building.

In two marches, the first of twelve miles to Chowke, and the second of sixteen miles to Khandala, the top of the Ghauts was attained. Here a large building of solid masonry divided into four or five apartments, built by a wealthy Native for the convenience of travellers, was found unoccupied, and appropriated by the troops. This was a most fortunate occurrence, as the weather proved rainy and tempestuous, and a day's halt was necessary to get up the whole of the baggage, and to rest the cattle. A change of climate was immediately felt; there was no longer experienced the hot enervating oppressive atmosphere of the Concan. Four additional stages of unequal length; the first to Karlee, eight miles, a hot confined situation among the Ghauts, liable to great vicissitudes; the second to Wargaum, twelve miles, now more on the open plain; the third to Booseregaum, fifteen miles, a poor small village surrounded with a mud wall at which no supplies can be obtained with certainty, which was not the case at the other stations, where, meat, poultry, eggs, milk, vegetables, fruit, straw, firewood, &c., from tolerably well furnished bazars

could be supplied; and the fourth of five miles to Kirkee. Spirits, flour, rice, biscuit, tea, sugar, and some live bullocks were required to be brought forward by a provident commissariat. Fresh baked bread at a very little expense might be on such occasions forwarded from Bombay to Panwell, and from Poona to Khandalla and Wargaum, which would be a great boon to the troops, and a vast improvement over the present issue of stale biscuits.

With every precaution, not neglecting a free supply of straw to the tents to cover the damp ground, it was found, chills at night were experienced, and the more dangerous, from the irritable state of the bowels induced by the sudden change of water and to fresh meat and a vegatable and mixed fruit diet;—the heat of the tents in the day time was trying, and occasional exposure to the sun's rays was unavoidable. The consequence was the frequent occurrence of diarrhœas, flatulent colics, dyspepsies, and more rarely fever, common or bilious, with now and then a case of marked determination of blood to the head. Where there were much nausea and oppression at præcordia, the exhibition of an emetic was of signal benefit; but generally in the bowel complaints, although often accompanied with much pain and spasm, and even with coldness of extremities, a mild opiate of a few drops of solution of muriate of morphine with a carminative of essence of peppermint coupled by quietness in a dry warm bed, and the application of heat to extremities and abdomen, allayed the inordinate action. When the nausea, occasional griping, and variable purging continued, shewing that the cause of irritation was not removed, or that the biliary secretion was irregular, a small dose of calomel with a minute portion of Ipecacuan, and muriate of morphine followed after three or four hours with a dose of compound powder of jalap or of castor oil, was exhibited usually with relief, when quietness and abstinence were rigidly adhered to. In the cases more marked with pain and irregular distribution of temperature, and even in those where the determination of blood to the head was striking, as they seemed connected with overloaded stomach, an emetic of Ipecacuan grs. xxv. with carbonate of ammonia ℈i with the additional means of equalizing the heat of surface was always of service, often prevented the necessity of blood-letting and always reduced the violence of the symptoms.

Kirkee, the only station under the Bombay Presidency provided with permanent accommodation for a Regiment of European Cavalry, embracing an area of some four square miles, is well defined by the river Moula, which meeting an obstacle to its direct south-easterly course in a

spur or unequal line of hill from four hundred to two hundred feet in height, running in a north-easterly direction from the western Ghauts, is turned to a northerly course for three miles, till, reaching the extremity of the ridge, for the last mile elevated only thirty or forty feet, it is enabled after a short easterly run to resume its southing. On a low part of this ridge near its extremity, on which somewhat more elevated ground the village of Kirkee is situated, and its sloping sides, enclosed within the deep sweep of the river, the military cantonments are placed. They lie E.S.E. from Bombay, about two and a half miles to the north of the city of Poona, with the river Moota interposed, close on the right bank of which the city stands, and which is crossed by a fine bridge, half a mile lower, or to the N. by E. at the Sungum immediately before its junction with the Moula.

The most direct and new post road from Bombay to Poona, which intersects the Kirkee cantonment, turns off in an easterly direction from the road by Panoula, about five miles after passing Wargaum, and a most durable bridge has been lately finished over the Moula, on the N. by W. to connect the road. On the east again, another bridge, the old Kirkee, is thrown across the Moula to connect the Seroor and Ahmednuggur road. By the new road, and an excellent one it is, Kirkee cannot exceed sixty-two miles from Panwell, and communication with Bombay is easily effected within eighteen hours.

The station is celebrated as the spot chosen by Mr. Elphinstone in 1817, then Resident at the Peishwa's Court, to make a stand with his Subsidiary force scarcely numbering three thousand Sepoys, or three Battalions under Colonel Burr, against the suspected treachery of the Peishwa, and where he repulsed a sudden attack made by the Mahrattas in force exceeding twenty thousand.

About two and a half miles dirictly S.E. with two rivers interposed, the the Moula and the Moota Moula, or four and half miles by the high road cross the Sungum bridge, the Poona cantonments are placed. The ridge on which the cantonment is built, although not exceeding forty feet above the bed of the river, commands the view of an extensive bare plain almost destitute of trees to the north, and relieved only by a few detached rather remarkable high conical hills, the Cid hills, at two or three miles distance across the river to the N. E. which run diagonally with the Kirkee ridge, or east. A ridge of a few hundred feet in elevation, and running more easterly, having the temple of Parvati on its extremity which overhangs Poona, breaks the view at three miles distance to the S. W. beyond which further south, and running E.N.E. is a very lofty range of

mountains, among which are the forts of Singhur, Poorundhur, &c., rising upwards of two thousand feet. The western Ghauts are at the distance of thirty miles. The plain slopes downwards to the east very gradually, and is estimated at Kirkee, sixty miles inland, at about one thousand eight hundred and twenty feet above the sea, and between four hundred and five hundred feet below the parallel chain of Ghauts.

The surrounding hills are of the trap formation. The ridge on which the Kirkee cantonment is built, consists chiefly of a bluish grey broken-down basalt. In one or two places where more massive, the rock is quarried for its hard dark bluish stone. This rock is scattered about naked, but generally has a thin sterile clayey and gravelly soil of a reddish colour overlaying it, bearing with difficulty in the rainy weather some coarse stunted grass. The slopes, however, are in many places furnished with a heavy loamy soil, which, with the addition of some light manure, the ashes of burnt branches, leaves, and weeds, bear fair crops of the esculent grains in common use; Jowaree, Holcus Sorghum; Bajree, Holcus Spicatus; Ragie, Cynosurus Coracanus, in the monsoon, and certain pulses in the cold season following, which derive their nourishment from the heavy dews. In a few places the heavy black cotton soil of variable depth is found, which yields with little culture rich annual crops. A few fruit and other trees of natural growth are met with in the course or neighbourhood of the river, as the Mango, Mangifera Indica; Tamarind, Tamarindicus Indica; Neem, Melia Arzadarachta; Babool, Mimosa Arabica, &c., but many are cultivated, and with care attain great perfection.

The station is almost entirely dependent on the river, and the monsoon rains for water. Six or seven wells have been dug through the solid rock in different parts of the cantonment, and the springs have been reached about the depth of twenty-six or thirty feet. They afford a scanty supply, even with the surcharge of water received from the monsoon rains and occasional showers, and generally before the hot dry season has passed they are nearly exhausted. The water, however, is of a pure hard quality after depositing a moderate earthy sediment. It would require a depth of seventy feet to be reached to secure any steady supply. But the river prevents an absolute want of water, being in some places under a mile's, no where, above two miles's distance. It is here between twenty and thirty yards in width, and two feet in depth, running sluggishly over a gravelly or rocky, but in many places, a rich muddy bottom. During the monsoon rains it rises from twelve to twenty feet, and forms a strong rapid heavy current of muddy water. Fish, trout, murrell, eels, are often caught

in it, and they have been found wholesome. Delicious water-melons grow along its sides.

The cantonment is much exposed. The winds and seasons are here the same as throughout the Deccan. The hot parching northerly winds of April and May are felt very severely, and the glare and heat then from the light bare soil are most intense. Luckily it is not entirely beyond the influence of the alternate sea breeze in the afternoon, which, although frequently slight, and then lessened or interrupted by the higher land to the west, is generally sufficient to give it fresh cool evenings. It has a bleak, dreary aspect during the prevalence of the S. W. monsoon, from the violence of which, however, it is most protected.

Besides the small village of Kirkee on the higher extremity of the ridge to the N. E. and from which the station derives its name, there is another small village Bapooree, about $\frac{3}{4}$ of a mile to the N.W.; and, since the permanent settlement of a regiment, there has arisen a large native establishment of horsekeepers, camp-followers, and shopkeepers, where a bazar is established for many necessary wants, but which is not so much resorted to from the proximity of the city of Poona, and a better supplied military bazar adjoining. On the further side of the river northward, all within two miles distance, are three or four other villages, viz. Dapooree to the N.W. in the immediate vicinity of which there is a residence for the Governor when he chooses to visit the Deccan. A botanical garden was laid here in 1828 on the banks of the river, but it does not receive much attention, apparently. Bopgaum or Bopgale to the N., Kullus to the N. E. and again to the south, but without crossing the river at the base, as it were of the station, we have Waree.

The inhabitants of these villages are few in number, inoffensive, very poor, of the Deccany caste of Hindoos, and are chiefly occupied in the cultivation and watching of the neighbouring grounds, in tending cattle, and other labouring work. Their houses are imperfect, low thatched, mud hovels, huddled together, and surrounded with all sorts of filth. The whole neighbouring population, exclusive of the camp-followers and regimental bazar, may not exceed eight hundred souls.

The district does not bear a good reputation for health; the water is not esteemed, the climate is considered cold, the bazar not well supplied. The average term of life amongst them is estimated at thirty-five years, but there are at present several people living between seventy and eighty years of age. There seems no particular endemial disease, but remittent fever and agues are very prevalent, and easily excited by exposure to an

easterly wind, or after any excesses or fatigue. The prevalent sickness arises from want of proper nourishment and protection from a variable climate; hence glandular disease is obstinate and common, rheumatism prevails, and many cases of idiotcy may here be met with; and epidemic disease, when it appears, makes dreadful ravages; visitations of cholera or of small pox only ceasing with the failure of victims.

The *Barracks*, &c., were erected in 1826 and 1827, and taken possession of in June 1827. They are built in six parallel lines of pendals, or barrack rooms, from E.N.E. to W.S.W. with the front to N.N.W. The front line is appropriated for the eight troop's Serjeant Major's quarters. The four centre lines contain four long barrack rooms or pendals in each, and in the rear line are placed the Quarter Master's stores, the school room, the Serjeant Major's Quarters, the Canteen, two cooking houses, and the regimental artificers' shops. They are constructed of half burnt brick with chunam, thatched over with straw and leaves and having a flooring of well cemented gravelly clay. They have an airy appearance, and are found to be dry. Each line of building is separated by a street 190 feet broad, and the rooms in the same line are distant from each other 116 feet. The rooms in the different lines are not placed directly in the rear of each other, but chequer-ways. The barrack rooms consist of a single story, the floors of which are raised about two feet above the ground, have a tiled verandah on the rear and left or western gable seven feet in breadth, with a portion at the angle built up for keeping water and for the purposes of personal ablution. Each room is 109½ feet long, 11 feet of which at the eastern end is partitioned off and subdivided for two non-commissioned officers; 23½ feet broad, and 20 feet high to the centre ridge of the roof or 11½ feet by the side wall, with 4 doors and 20 windows placed opposite to each other. The windows are raised 2½ feet above the floor, and are 5 feet by 3 feet in size, filled with teakwood boards which are divided into three unequal parts, the upper part of which opens upwards and outwards, and the two lower inwards. Three chimney like venetianed ventilators are placed on the ridge of the roof.

The barracks are calculated to accommodate a regiment 700 strong, each room being capable of containing with ease and comfort 38 men and 2 non-commissioned Officers, each of whom has thus a space of upwards of 1400 cubic inches.

There are two privies, one on each flank, large and commodious, placed at the distance of 150 feet, and, from the excrement being received in baskets and removed every morning, any unpleasant smell rarely extends far, and is generally prevented. Reservoirs for the urine have been dug at a lit-

tle distance from the S.W. angle of each barrack room which has a walled shelter attached with a pipe. These reservoirs are covered, and of such a size as to obviate the necessity of emptying them for six months, although opened and cleared out every other day.

About 100 yards distance on each flank a street of stone, mud, and thatched huts is built to the number of 20 or thereabouts, with a distinct privy, for the accommodation of the married soldiers, none of whom, excepting serjeants occupying the partitioned ends of the pendals, are mixed with the single men in barracks.

There is a considerable extent of clear space around the barracks, in front to the extent of 100 yards used as a private parade ground for forming and inspecting the troops, and in the midst of which is the main guard-room, and beyond which the horses are picketed. In the rear there is a wider space of about 150 yards between them and the line of Officers' Bungalows, which is used as a foot drill ground, and in which the rear guard-room is situated. On the southern slope of the ridge extending to the river are the large and sterile lawns or compounds of the Officers, and the extensive open plain on both sides affords ample ground for field exercises and riding instructions. About 100 yards to the right of the barracks, situated at the extremity of the open space in front, in an airy dry situation, are twelve square buildings of brick and tiles, in three lines, each 10 feet square, which are the cells for the solitary confinement of prisoners. They have a door and are ventilated by oblique barred openings in the upper and lower parts of the walls.

At the distance of from 300 to 700 yards to the left or westward of the barracks, a little in advance of their front line upon a more elevated spot and with an open approach, the *Hospital* stands. This building is of later erection than the barracks. It was finished in 1830, and first occupied in June of that year. It is a large irregular oblong structure, built of burnt brick cemented with chunam, and tiled, with a flooring of flagstones raised between two and three feet above the surrounding ground. It has a N. N.W. aspect, and is dry and airy. The wards form three sides of a square open to the N. N.W. enclosing an area of 91½ feet by 121¾ feet. Each side forms one large ward except that on the south, which is divided into two, by a passage leading into the surgery. The two side wards are each 90 feet long, 24 feet broad, and 22⅜ feet high in the centre, or 16 feet high by the side wall, with two doors, 8 feet by 4½ feet, and fourteen windows 6½ feet by 3½ feet, placed 3½ feet above the floor, and three chimney-like ventilators on the ridge of the roof.

The doors are of teakwood, and the windows of glass painted green which open inwards. Such a spacious ward, with nothing to obstruct the circulation of air, and furnished simply with light iron bedsteads and plain teapoys, contains conveniently thirty-eight patients. The southward side is divided into two wards of smaller dimensions of 56 feet long each, but corresponding in width and height, with two doors and eight windows, one of which in the south wall is very large, 6½ feet by 7 feet, and each capable of containing twenty-three patients. For this climate the sick in hospital might be considered crowded in the numbers calculated above, or one hundred and twenty-two in all which gives 1100 cubic inches of space to each; but the accommodation if confined to ninety is most commodious.

These wards have a verandah in front 9 feet in breadth, defended at its outer edge by a wall 2, 5-6th feet in height, from which issue several wooden posts for the roof. The verandah of the side wards is extended backwards to an after area formed by the various office-houses of the hospital, affording a walk of upwards of sixty yards.

This after area is 121¾ feet by 42 feet, and has on its north side the surgery 8 feet by 20 feet, and two other rooms for the medical stores and an office; besides at each extemity opening from the side verandah a small ward with one door and window for the accommodation of any particular cases requiring solitude or separation; opposite are the steward's store-room and the apprentices room, and the cooking house; and jutting out from the corners of this line and at the termination of the side verandahs the privies are placed, each 20 feet by 10. Contiguous to the stewards store-room but opening from the outside without the gate of the after area, is a room for the reception and examination of dead bodies, 20 feet by 10 feet, and at the distance of 210 feet. Quite detached, is a small building used as a female hospital, containing a room 30 feet long, 18 feet broad, and 14 feet high, with two doors and four windows, capable of accommodating 10 women; and two verandah rooms in the south, 12 feet by 8 feet for the nurse and midwifery cases, with small adjacent but detached cookhouse and privy.

Two bungalows have been built, one at each side east and west of the hospital at the distance of nearly 100 yards, for the accommodation of the apothecary and steward; and at the distance of nine feet in front of the side wards are the detached houses or rooms for the hospital serjeant and the hospital guard. A considerable space of ground around the hospital is enclosed by a prickly pear hedge for greater seclusion and protection, and which is kept clean and free of all rank or decaying vegetation.

To the excellent accommodation just described, little fault can be found, and there is small room for improvement. The ventilators have not answered, being so much exposed and open, that, during the wet monsoon, they exclude neither the rain nor the raw damp air, although dammered at top, and the side venetians protected with bamboo matting. Narrow oblique openings in the upper part of the side walls, which would be protected by the overlapping roof, would answer far better the object of promoting the escape of the heated air and permitting a free circulation. Were the verandah to surround the pendal, instead of being confined to two sides, great additional comfort and coolness would be gained.

Public water carriers are employed to bring fresh daily supplies of clean water for drinking and the purposes of washing. One side of the washing room has two tiers of shelves of solid masonry for supporting the globular earthen vessels which contain the water, and in the other side is placed an open mouthed barrel with a tub or two for water for general purposes. A trough, provided with a stop cock to allow the easy escape of the dirty water, and capacious enough to permit three or four men to wash their hands, &c. at the same time, is fitted up at a convenient height. There are no recesses to harbour filth in the barrack rooms, every man's appointments and necessaries are placed on pegs or thin wooden shelves fixed at a sufficient height by the side of his bed, which is provided by the public, and consists of boards and trussels raised about two feet above the floor, and under which his box, agreeably to regulation, can be thrust and kept. Tables and forms are provided also for the convenience of messing, and a scale of diet is laid down, and furnished by Government at a reduced rate to the soldier. The daily ration drawn for each man, not in hospital nor in imprisonment, is bread 1 lb. 2nd sort, beef 1 lb.; rice 4 ozs.; salt 2 ozs.; coffee or tea 5-7th ozs.; sugar 1½ oz.; firewood 3 lbs. with one dram of arrack at the option of the soldier, to be consumed at three regular meals, breakfast, dinner, and supper.

The men are messed in squads of four, and native cooks are entertained, at a small weekly cost, who are further engaged to provide milk for the tea or coffee, butter, eggs, steaks, chops, additional vegetables, cheese, &c. as they may be occasionally asked for by varying tastes and appetites. The station being in such proximity to a populous city, all sorts of supplies are procurable in abundance, and little could be altered in the ration for the advantage of the men beyond the occasional variety of mutton. The supply of vegetables probably is wisely left to the choice of the messes, and for the rice, which is not much relished, over and above what is used for the soup, unless when curried meat is the order of the day, the cooks

are not averse to substitute carrots, onions, country greens, and occasionally pumpkins, yams, &c. A dram of spirits still continues to be offered to the men at dinner time, and an inducement to take it is held out in its issue at a lower rate by one-fourth than its ordinary retail price. The issue of a ration dram is a relic of former times, when salt meat and stale provisions were the ordinary and only rations provided, but surely, it may be well dispensed with when mixed fresh provisions of an excellent and wholsome quality are supplied, and its continuance leads to a wrong impression of its utility and necessity. If a boon is to be conceded in the shape of liquor to be added to the solid ration, let it be in something of a less pernicions quality and tendency, and I have no doubt, were Government to take the trouble of providing good beer for the troops, it would be more than repaid in the improved morale and health of the army, and would indemnify itself for the immediate pecunairy outlay very soon, by being enabled, from the large consumption, to issue it at a profitable price, still within the means of the soldier, and even sufficiently low to lead to its being sought after. On board of ship, porter has been already substituted for rum with most excellent effect.

After this brief description of the station with its accommodations, and supplies, it will be necessary next, before entering upon the diseases which have prevailed, to give an exposition of the constitution and state of the Regiment on its arrival at it. The period chosen for its arrival in India was the latter portion of the moosoon, and but for a favorable season, might have proved unfortunate. The rains ought to have ceased before the arrival of troops. Exposure to the intense damp of the tropical rainy season, before the primary arrangements for establishing troops with the necessary comforts are completed, gives a severe shock to the constitution, even when no particular disease is immediately excited, and from my experience, I am satisfied of the advantage of embarking troops, from England for Western India in the weeks following the first of July. The Regiment, five hundred strong, arrived at Kirkee in a healthy efficient state. From the excellent regulations and arrangements now enforced by the Company for the transport of their troops, the men maintained their health and spirits throughout the voyage of four months, and disembarked in good condition. One casualty only having occurred, in a man formerly a buffoon at Astley's amphitheatre, who, having sold his boots to a sailor for liquor, lay down on deck under its influence, and was finally detected with his feet wet and shaded, and his head exposed to the direct meridian rays of the sun. He was awoke to be informed that he was a prisoner, and soon afterwards he reported himself sick. He laboured under intense

fever with irregular distribution of heat; delirium soon supervened, and he died comatose within five days.

Of the twenty cases reported unfit for duty and sick on reaching Kirkee, scarcely one was confined to bed. External disease, or superficial inflammation, ulcers, accidents, &c. chiefly filled the list; seven cases only of internal ailments being under treatment.

After being augmented by the addition of one hundred and fifty volunteers, the state of the Regiment, as to age and Indian service, is shown as follows:

Strength 650.

| Ages. | Number |
|---|---|
| Under 18 years | 5 |
| From 18 to 20 do | 161 |
| do. 20 to 22 do | 130 |
| do. 22 to 25 do | 116 |
| do. 25 to 30 do | 70 |
| do. 30 to 35 do | 119 |
| do. 35 to 40 do | 48 |
| do. 40 to 50 do | 1 |
| Total. | 650 |

| Indian Service. | Number |
|---|---|
| Under 1 Year | 498 |
| do. 2 do | 13 |
| do. 5 do | 22 |
| do. 7 do | 11 |
| do. 10 do | 15 |
| do. 15 do | 67 |
| do 20 do | 24 |
| Total. | 650 |

I shall now proceed to shew the deaths from all causes that have taken place in the Regiment from 1st September 1841, to 30th September 1842.

| | Serjeants. | Corporals | Privates. | Total. |
|---|---|---|---|---|
| Strength | 46 | 32 | 572 | 650 |
| Deaths | 8 | 7 | 26* | 36 |

In these deaths is included, one, a corporal found dead, cause unknown.

*Ages and period of Indian service at which these deaths, exclusive of the one found dead, occurred.*

| Ages. | Number |
|---|---|
| From 20 to 22 years | 13 |
| do. 22 to 25 do | 10 |
| do. 25 to 30 do | 3 |
| do. 30 to 35 do | 4 |
| do. 35 to 40 do | 5 |
| Total. | 35 |

| Indian Service. | Number |
|---|---|
| Under 1 year | 27 |
| do. 2 do | 1 |
| do. 5 do | 1 |
| do. 7 do | 1 |
| do. 15 do | 3 |
| do 22 do | 2 |
| Total. | 35 |

* 8 are volunteers.

The diseases by which these deaths, and the whole admissions into Hospital in the course of the year, have been occasioned, are stated in the following return.

| Classes of Disease. | Specific Diseases. | Non Commissioned Officers and Privates. | | | |
|---|---|---|---|---|---|
| | | By each Diseases. | | By each class of Diseases. | |
| | | Admitted. | Died. | Admitted. | Died. |
| Fevers | Febris Quotidiana Inter | 6 | .. | 379 | 5 |
| | do. Tertiana Intermittens | 5 | .. | | |
| | do Remittens | 61 | .. | | |
| | do. Continua Communis | 307 | 5 | | |
| Diseases of the Lungs. | Pneumonia | 1 | .. | 27 | .. |
| | Hæmoptysis | 1 | .. | | |
| | Catarrhus Acutus | 20 | .. | | |
| | do. Chronicus | 5 | .. | | |
| Diseases of the Liver. | Hepatitis Acuta | 8 | 2 | 12 | 2 |
| | do. Chronica | 1 | .. | | |
| | Icterus | 3 | .. | | |
| Diseases of the Stomach and Bowels. | Dysenteria Acuta | 62 | 2 | 289 | 4 |
| | do. Chronica | 1 | .. | | |
| | Dyspepsia | 23 | .. | | |
| | Diarrhœa | 155 | 1 | | |
| | Obstipatio | 7 | .. | | |
| | Cholera Morbus | 1 | 1 | | |
| | Colica | 40 | .. | | |
| Cholera | Epidemica | 55 | 22 | 55 | 22 |
| Diseases of the Brain. | Apoplexia | 2 | .. | 12 | 2 |
| | Paralysis | 4 | 1 | | |
| | Delirium Tremens | 4 | 1 | | |
| | Epilepsia | 2 | .. | | |
| Rheumatic Affections. | Rheumatismus Acutus | 22 | .. | 25 | .. |
| | do. Chronicus | 1 | .. | | |
| | Odontalgia | 2 | .. | | |
| Venereal Affections. | Syphilis Primitiva | 56 | .. | 184 | .. |
| | Ulcus Penis, N. S. | 15 | .. | | |
| | Bubo Simplex | 23 | .. | | |
| | Gonorrhœa | 60 | .. | | |
| | Strictura Urethræ | 1 | .. | | |
| | Hernia Humoralis | 22 | .. | | |
| | Cachexia Syphiloidea | 2 | .. | | |
| | Phymosis | 3 | .. | | |
| | Verruca | 2 | .. | | |
| Ulcers and Abscesses. | Phlegmon et Abscessus | 111 | .. | 197 | .. |
| | Paronychia | 1 | .. | | |
| | Ulcus | 85 | .. | | |
| Wounds and Injuries. | Luxatio | 1 | .. | 83 | .. |
| | Subluxatio | 20 | .. | | |
| | Vulnus Incisum | 21 | .. | | |
| | do. Sclopitorum | 1 | .. | | |
| | Contusio | 37 | .. | | |
| | Ambustio | 1 | .. | | |
| | Fractura | 2 | .. | | |
| Punished | Punitus | 2 | .. | 2 | .. |
| Diseases of the Eyes. | Ophthalmia Simplex Membranorum | 18 | .. | 18 | .. |
| Diseases of the Skin. | Papulæ | 21 | .. | 48 | .. |
| | Squamæ | 4 | .. | | |
| | Exanthemata | 5 | .. | | |
| | Bullæ | 1 | .. | | |
| | Pustulæ | 9 | .. | | |
| | Vesiculæ | 8 | .. | | |
| Other Diseases. | Cynanche Tonsillaris | 13 | .. | 38 | .. |
| | Splenitis | 3 | .. | | |
| | Otitis | 1 | .. | | |
| | Hæmorrhois | 5 | .. | | |
| | Vermes | 2 | .. | | |
| | Dysuria | 1 | .. | | |
| | Varix | 1 | .. | | |
| | Tumores | 4 | .. | | |
| | Necrosis | | .. | | |
| | Dracunculus | 17 | .. | | |

The large proportion of casualties among the Non-commissioned Officers, amounting to one-fourth of the whole, or one in nine and a half, compared with that of the privates, one in twenty-two, requires some notice. It may be partly accounted for in the greater exposure to which they are subjected, especially at first, before the arrangements for Native Orderlies can be completed. The necessity of employing Native Orderlies ought to be fully impressed on Commanding Officers of troops, without loss of time, and their attention ought to be especially called to the disproportionate deleterious influence of the vertical rays of the sun in a tropical climate, to those of a more oblique direction in higher latitudes, where the heat may be felt temporarily almost equally intense. A recklessness on their own part often leads them to slight the cautions advanced on unnecessary exposure, and it requires the most stringent regulations, and the greatest circumspection on the part of their Officers, to render them more careful. Two Corporals and one Private fell victims under fever from this cause. The fever being complicated with subacute phrenitis; low delirium quickly appearing, and coma supervening. Death took place in all within five days. What increases the ill effects of fatigue and exposure in this class is, that they have increased means of purchasing refreshment, and, when jaded and heated, they thoughtlessly seek to relieve their sense of sinking and oppression by a recourse to drinking. Spirits only are conveniently within reach, and their price is best suited to their means, which is another strong reason for repeating the recommendation of Government's exerting itself to provide a less hurtful beverage. In several of the cases of fever, symptoms of delirium tremens were very marked, and, although they did not terminate fatally, these cases underwent dreadful shocks, and they were long ineffective. One case of fever, or rather of gastro-enteritis in a young man, reduced from Corporal in consequence of his yielding to drinking, was purely the result of excess in spirituous potations. The fatal and two other cases of delirium tremens occurred in Non-commissioned Officers. A long residence in India gives no immunity from the noxious effects of exposure to the sun, but disease then is of a more insidious character. The fatal, and one other case of paralysis, were owing to the conjoined effects of exposure and drinking, in men, volunteers, of quiet regular habits, yet seldom a night without being muddled, and thoughtless of mid'day exposure.

The regiment continued healthy till the latter end of October, when fever began to prevail epidemically, and soon obtained a great height. It subsided within the first fortnight of December. The numbers primarily attacked were one hundred and ninety-seven. The weather then was

considered unseasonable. A powerful clear sun, with sudden thunder storms, atmosphere variable, and great diurnal vicissitudes; some days, a fine breeze, cool and bracing, occasionally even raw; others, still and sultry; some nights, chilly and damp; others, close with a warm air. Luckily no case proved fatal. Its type was continued, or the remissions were at first very imperfect. It became in its course decidedly remittent, but rarely intermittent; relapses were regular intermittents, shewing how complete are the relations of the several types of fever, and that a vertical sun and atmospherical vicissitudes on a barren waste, just as effectually produce them, as marsh and jungle malaria, only in less intensity. Moreover, I have repeatedly witnessed, remittent and intermittent fever present in men under treatment for external disease, as syphilis, gonorrhœa, simple bubo, giving the suspicion of simple loss of nervous tone being sufficient to induce periodic febrile action. The duration of the disease under consideration was from three to five, seldom protracted to seven, days. The symptoms were those of simple excitement with great nervous depression, attacking rather suddenly with chills and heats, faintness or sense of prostration, headache, vertigo, frequent soft pulse, nausea, white tongue. Emetics at the commencement often followed with an opiate of morphine combined with potassio-tartrate of antimony to secure a diaphoretic effect at night, an alterative dose or two of calomel, attention to the bowels without drastic purgation, saline diaphoretics, spoon diet, and quinine on the earliest appearance of a remission, with a gradual increase of a light diet, were the measures successfully pursued, and they seemed to afford relief. Bleeding was rarely resorted to. In some cases, leeches were applied to the temples or to the pit of the stomach, and blistering the nape of the neck was occasionally thought necessary. The beneficial influence of the quinine, when exhibited on the slightest remission, was most marked. The fatal cases, as already noticed, that occurred, were sporadic, and attributable to direct exposure to the sun and excesses in drinking or other irregularities, and were of a more decided inflammatory character than the epidemic just described. One, a Serjeant sunk, after being convalescent from fever and apparently doing well, from great nervous depression during the prevalence of cholera. In few of the more urgent cases was general bleeding resorted to, although the best effects and speedy relief resulted from local bleeding and blistering, with the free use of calomel, antimony and morphine, in small repeated doses.

The health of the men was soon re-established after the subsidence of this acclimating fever, and the efficiency of the Regiment continued good

till the month of May 1842, when it experienced, a dreadful shock from an invasion of cholera. It this month fifty-three cases of cholera presented, of which twenty proved fatal. Two sporadic cases of great intensity occurred and terminated fatally, one in the preceding, and another in the following month. One case only has not been included under the head as *epidemic cholera*, being apparently the collapse succeeding a debauch on Christmas in a man of usually quiet temperate habits. He neglected to report himself on the supervention of a severe diarrhœa, was overlooked for a day, and finally brought to hospital against his will by a comrade in a dying state. No Commissioned Officer was attacked, but the disease proved fatal to four Non-commissioned Officers. Soldiers of all ages and periods of service were attacked, residence in India gave no immunity; but while many hard drinkers enjoyed excellent health, the large proportion of fine young soldiers of regular temperate habits attacked was remarkable. Neither were women nor children exempt, and several cases among them proved fatal. It raged among the surrounding villagers and natives as a pestilence. The remote causes were obscure; some very cold nights, followed by sultry cloudy days, and rather variable weather, were remembered to have preceded, and did accompany the disease. Severe colics and diarrhœas attributed to an abundant fruit season of melons, mangoes, &c., had become rife. There seemed withal, however, reason to suspect its dissemination from intercourse with a diseased nucleus. The regiment was remarkably healthy; a fatal sporadic case with all the symptoms of epidemic cholera had certainly occurred, but was almost forgotten, when a party of seventy-five mounted men were ordered to occupy the Horse Artillery barracks at Poona, in consequence of the destruction by fire of two large barrack rooms and many of the detached huts at Kirkee. Cholera had been prevailing very lately in the Poona military cantonments, and appeared soon after the arrival of the 1st Bombay European Regiment, which had suffered on its march from Bombay. The party had not remained a fortnight at Poona, when two cases of cholera presented; two others soon followed, in the mean while the two first died, the others became rapidly moribund; more cases occurred in the night, two of which eventually died. On the next day the party returned to Kirkee. But the disease clung to it. About twenty-three cases occured in the detachment within the week after its return, of which seven proved fatal; one, a relapse, that had been seized at Poona, but sent to Kirkee, on the appearance of a favorable re-action. The remainder took place among the general body, which had not quitted Kirkee, of which eight terminated fatally. The disease prevailed extensively

and in virulence for one week only, within which period sixteen of the fatal cases took place. It ceased for a day or two, when a few more cases were seized, and then suddenly disappeared. The average duration of the fatal cases under treatment was eleven hours. Two died in four hours.

*Of the Fatal Cases.*

The Ages were,

| | | |
|---|---|---|
| 2 at 20 Years. | 2 at 24 Years. | 1 at 34 Years. |
| 4 at 21 do. | 1 at 26 do. | 1 at 36 do. |
| 3 at 22 do. | 1 at 28 do. | 1 at 38 do. |
| 4 at 23 do. | 1 at 32 do. | 1 at 40 do. |

The Indian Service was,

| | | |
|---|---|---|
| 15 under 1 Year. | 1 under 3 Years. | 2 under 15 Years. |
| 1 do. 2 do. | 1 do. 7 do. | 2 do. 20 do. |

Violent action of the primæ viæ was an early, if not the earliest, symptom, but many were simultaneously seized with vertigo, and sense of faintness, and a vomiting, and seemed the consequence of impaired cerebral action. Nausea and griping, vertigo and faintness, purging and vomiting, with rapid sinking of features, indescribable feelings of illness, haggard pale expression, oppression at præcordia, thirst, cold extremities, doughy feeling of skin, clammy perspirations, husky voice, and thready pulse, were the symptoms described and met with in the early stage. If not relieved, spasms of the legs and feet, of the hands and arms, pain of left side of chest, or in back, sense of heat and intolerable anxiety in chest, came on in paroxysms, under which the powers of life failed, the pulse was no longer perceptible at the extremities, which were shrivelled; the eyes were sunk and bloodshot, the countenance and patches of the skin livid, there was low tumultuary action of the heart, and great thirst and jactitation prevailed; want of sympathy or apathy of the future was very evident, but the intellect continued clear with occasionally short bursts of delirium or rather of agony; death often taking place suddenly, but occasionally with protracted coma. The evacuations from the stomach and bowels were at first frequent, copious and of a dirty serous nature, but, as the spasms advanced, they became infrequent; the urine was scanty throughout. From the hurried and frequent calls on our time, careful, and minute autopsies were out of the question; but the fine vermilion blush of the peritoneum, the varicose enlargement of the vessels of the stomach, the turgidity of the large veins and right side of the heart with an adhesive pitchy looking blood, the congested condition of the ves-

sels of the brain, and a finely injected state of the vessels of the spinal marrow, were in all examined, the most uniform anatomical appearances.

The cases that were seen and subjected to treatment in the first stage generally did well. Those in which spasms had commenced were more doubtful, and deaths and recoveries were nearly equal. When the spasms had passed, or greatly subsided, fatal collapse was witnessed. The duration of these stages was variable; the first, in some cases, lasting from twelve hours to even three days, in others, being succeeded by the spasms in an hour. The term of the spasms was short, and the period of collapse varied from three to nine hours.

When seen in the early stage, and there were much nausea and oppression at præcordia complained of, emetics of ipecacuan, and carbonate of ammonia were usually prescribed, and with good effects, followed by a large dose of calomel, and a draught of tincture of muriate of morphine ʒss. and of aromatic spirits of ammonia ʒi, with essence of peppermint m. xv. Leeches or sinapisms to the pit of the stomach or the nape of the neck were often resorted to, and bottles of hot water, bags of hot salt, or hot bricks, were applied to the extremities and for the purpose of general warmth. Weak warm brandy and water, or sago and wine, or soup, was allowed as a drink or light nourishment. If the pain, purging, vomiting, and sense of faintness abated, and the heat seemed more equally diffused with a thin warm perspiration, little else was done beyond the administration of a purgative of pulvis jalapæ. comp. or a turpentine enema; the attention being chiefly directed to quietness, keeping up the heat of the surface, and mild nourishment. When the vomiting was more urgent, saline effervescing draughts containing an excess of soda and a few drops of tincture of muriate of morphine with small doses of calomel and morphine, repeated at intervals of ¼, ½, 1 or 2 hours, seemed to have good effect. In some slighter cases a timely draught of tincture of muriate of morphine m. xxv. aromatic spirit of ammonia ʒi, brandy ʒi in peppermint water, and attention to keeping up the general warmth often arrested the morbid train. Where spasms of the extremities had commenced, characterized more by their agony than the violence of the muscular action, powerful frictions with stimulant liniments, or the application of hot sinapisms or scalding turpentine, gave temporary relief, but the efficacy of the internal remedies was doubtful. Hot brandy and water often increased the sense of internal heat, thirst, and anxiety. Saline effervescing draughts as above, or cold water, gave more decided relief, yet here even, calomel and morphine had often a marked good effect, and the stimulant draught as above

repeated agreeably to circumstances, seemed to excite the circulation. Draughts of common salt with or without carbonate of soda, in the proportion of ʒii of the former, and ℈i of the latter, in ʒiv of water, were exhibited, and although at first exciting vomiting, were quickly tolerated, and had a marked effect in raising the pulse. In one or two cases the warm bath was resorted to, but with injurious effect in reducing the heat and increasing the exhaustion. Stimulating turpentine enemata seemed generally to produce beneficial re-action. In reviewing the practice I have to regret, that bleeding was not more resorted to. It would have afforded, I have no doubt, such relief to the oppressed thoracic viscera that the other means would have had more effect.

It is difficult to say, what general measures are suitable to be adopted during the threatened attack and prevalence of a complaint, the causes of which are in such obscurity. At the risk even of exciting alarm I should insist on all intercourse with the quarter in which and the body among whom the disease appeared being interdicted, for although contagion is not suspected, a distemperament of the air giving the predisposition seems in my opinion produced, and is not quickly corrected, but all unnecessary alarm must be avoided, a manly confidence being a great protection. Severe diarrhœas prevailing among us at the appearance of the disease and accompanying it, which might have been influenced by the plentiful consumption of mangoes, melons, &c., it was thought prudent to have a strict watch over the quality of the fruit allowed to be exposed for sale. A light warm drink of coffee, or conjee, prepared by the cooks in time to be served to the troops before turning out in the morning, and the reduction of night duty as much as possible with a generous diet, are proper measures. It may seem incredible, but the men at such a time require to be urged to apply for medical relief on their earliest feelings of indisposition, and especially on the first appearance of any relaxation of the bowels. They are averse to give in or to think themselves affected with the prevailing illness, and prefer taking themselves to the canteen, and trying the effects of spiced spirits, the powerful stimulus of which on the deranged action of the stomach too often increases the malignity of the symptoms.

The Regiment passed its first monsoon very happily; a number of cases, but of ordinary disease certainly presented, but generally in no great intensity; still towards the latter part, when, either from the increased weakness of the system, or the sudden return of hot weather, disease became less tractable. Bowel complaints have presented throughout, easily accounted for in the exposure to a vertical sun, night air, great diurnal

range of temperature, and variable states of atmosphere, throwing the organs into states of alternate high excitement and torpor, with irregularities of diet and carelessness in avoiding chills, after being heated. Morphine with some carminative to allay inordinate action, calomel to correct, and ordinary means to remove depraved secretion, the resources for equalizing the circulation, and the deprivation of all noxious stimulants, soon restored healthy action. One great desideratum during the prevalence of the rainy weather that I may mention, was the want of stoves especially in the guardrooms, for enabling the men to dry their wet clothes, and to warm themselves, after their tour of exposure on sentry. I have no doubt they would materially conduce to their comfort, and would lead to a more speedy rally from the shock the system must have undergone, and, what is more essential, would ward off many attacks of illness; for nothing, in any country, but especially in India, wears out and weakens the constitution more than the repeated disturbance of the night's rest, and the prolonged exposure to the night air. From what has been stated it will be inferred that, with the exception of the attack of cholera, disease has presented during the last year in an unusually mild degree. But, mild as first attacks in healthy sound constitutions have been, they are treacherous and insidious. In the instance of fever, convalescence requires to be carefully watched, the primæ viæ do not recover their tone for a long time, and the least excess of diet, too early exposure to night duty, or any slight irregularity at the principal phases of the moon, surely entails a relapse. This relapse may assume a remittent or quotidian type, very frequently a tertian with daily paroxysms of varying intensity and duration on alternate days, but seems under the control of quinine. It is nevertheless dangerous, as a few relapses undermine the constitution by aggravating any lurking mischief in the bowels, and unless the utmost vigilance is exercised, on the first debauch, dysenteric symptoms follow running rapidly to ulceration. From what I have witnessed, I am disposed to conclude that bringing the system under the slight but full influence of mercury, powerfully changed the disposition to febrile relapses. In those dysenteric cases alluded to, general blood-letting has been resorted to, sometimes with great advantage, but usually free topical bleeding is of more marked benefit, with hot fomentations, laxatives to remove noxious secretions, and opiate enemata to relieve irritation, with rigid abstinence. Mercury however I have found to be the safeguard, and in first attacks, I continue its exhibition in three or five grain doses combined with two or four grains of ipecacuan. and $\frac{1}{4}$ or $\frac{1}{2}$ grain of muriate of morphine, every six hours, till the system come under its influence, or

the evacuations become healthy and regular. In subsequent attacks, or in more subacute cases, I have found benefit in large doses of ipecacuan. six grains with muriate of morphine ½ grain, and extract of gentian four grains, and the occasional addition of five grains of blue pill night and morning, with an intermediate laxative, persevered with till the irritability of the bowels has been allayed, and the evacuations have shewn healthy fœces. The two fatal cases of dysentery occurred in individuals whose constitutions had been undermined by previous attacks of fever, and who had yielded to excesses soon after leaving the quiet and regularity of hospital.

In connection with the subject of fever, I may here allude to the marked predisposition shewn to the symptoms of delirium tremens. Although I am inclined to attribute this effect in a great degree to the quality of the spirit prepared, which can rarely be obtained free from adulteration with noxious narcotics to increase its intoxicating power, there can be no doubt this is chiefly owing to the influence of a vertical sun in exhausting the nervous energy. After a debauch in a man of dissipated drunken habits, it requires great circumspection to prevent an attack, in the depression left from the previous excitement, by a modified stimulant and nutritious regimen, and the careful exhibition of opiates to quiet the marked irritability and restore regular sleep. When the symptoms are fairly established, the aberration of mind complete with constant wakefulness and fidgetiness, generally clean tongue, frequent soft pulse, tremors, skin cool, often with copious exudation, eyes slightly bloodshot with a suspicious look, occasionally clear, countenance pale; I have found the exhibition of muriate of morphine in ʒi. doses or upwards of the tincture, or one or two grains of the substance, repeated either alone, or with the addition of ½ grain doses of tartrate of antimony, and two or three grains of calomel, every four or six hours, supporting the strength with light nourishment, and the occasional use of beer, or brandy and water, and counteracting any marked increased determination to the head by cold applications, effectual, after three or four administrations, in inducing sleep and checking the disease; when ordinary general measures are sufficient to restore the tone and health of the system. I have ever found personal restraint injurious, one or two judicious attendants will be always able to anticipate any violence or the like; but the constitution has suffered a severe shock, and long continued care is requisite to confirm the health.

The prevalence of chronic enlargements of the inguinal glands was soon brought under notice, which seems to be connected with some peculiarity of climate. They are developed by a slight strain, hard riding, sores

on the extremities, gonorrhœa and chancres, and some times by no evident cause, or rather some internal constitutional change. Those from chancres or sores on the extremities are most acute, run their course rapidly, and terminate in suppuration, healing very slowly by granulation. Most usually the glands become indurated, enlarged, and only occasionally painful, chiefly at night, and are most intractable; neither subsiding nor reaching complete suppuration. Leeches, hot and cold applications, mild diets, quiet and exercise, mercurial frictions, blisters, pressure, the superficial application of hydrate of potass, iodine and its preparations, mercury, quinine, general attention, have all been resorted to and with doubtful benefit. Loss of health and strength is produced by the confinement, the appetite fails, a low irritative fever is induced, or severe nocturnal pains of the joints and shaft of the long bones, with great loss of power supervene, and the system becomes quite cachectic.

Such cases, together with convalescents from dysentery and fever, and other ill conditioned subjects, although with no formed disease, beyond weakness, pallor, and on occasion of any accidental injury, the health being slowly restored, peculiarly require a change of air to a convalescent station. They are long incapable of duty, or, if returned to it, soon have a relapse of illness which increases the evil. Many young men are thus after a few years of very irregular service lost, who, had they been indulged in a few months leave at some cooling bracing station under judicious care, would have been restored to the service as efficient duty soldiers. The Mahabuleshwar Hills, seem to combine many of the advantages required for invalids, in its reduced temperature and buoyant air, from its great elevation, and in its being within the direct influence of the fresh sea breezes. I am well aware of the trials that have been already made of its effects on diseased European soldiers, and have viewed with regret the unfavorable results reported; but I have ever considered, that in the first trials the very injudicious selection of cases under severe disease requiring active treatment and attention, or of chronic organic disease which nothing short of an entire removal from a tropical climate was at all likely to ameliorate, and even of cases in the last stage of sickness, has led to such a result; for I have seen individual Officers and many soldiers labouring under simple debility from repeated attacks of sickness or constitutional weakness and a great proneness to disease, return after a few months residence on the Hills, in a state that might be fairly termed robust. At present, I can only contemplate with regret the fate of several young soldiers under the unavoidable exposure, in their weakened state, to another hot and wet season.

Before closing this report, I may further add, that, at the end of Sep-

tember 1842, 35 cases remained in hospital, 8 of which only being chronic affections, and recommeneded for discharge from the service; 2 accidents in the field; 2 recruits found to be ineligible for general service; 2 worn out old soldiers, and 2 volunteers, one whose health was undermined by severe service in Persia, and the other in the Affghanistan Campaign.

## Article XII.

### *Observations on the good and bad effects of Calomel in some of the Diseases of India.* By J. Murray, Esq.

Presented, February, 1843.

In a former paper, I detailed the results of some experiments which I had instituted on dogs, with the view of ascertaining the physiological effects of calomel on the capillary and secretory functions of the gastro-intestinal mucous membrane. In prosecution of this enquiry, I would now venture to submit a few observations on the therapeutical operation of this medicine in the treatment of some of the diseases of this country.

Before proceeding to the consideration of the application of calomel to the treatment of individual diseases, it may be well to state generally its most important physiological effects. Those which have been most satisfactorily established appear to be the following; of which the first, second, and sixth, are deduced from the experiments formerly detailed, and the others have been generalized from the published records of clinical experience.

1. Calomel excites and increases the secretions from the mucous follicles, and serous exhalants of the intestinal canal; and in large doses it alters these secretions, occasioning a sero-albuminous, sanguineous, or other preternatural effusion on the inner surface of the bowels, as shewn in Exp. II., IV., XV., VI; and still more strikingly in Exp. IX.

2. It increases the flow of bile into the duodenum: and this effect appears to be produced, not simply by emulging the gall bladder and biliary ducts, but also by directly increasing the secretory function of the liver. This seems to be deducible from the fact, that, in all the experiments in which an augmented flow of bile into the deodenum was produced by the calomel, the gall bladder was observed to be distended. No obvious alteration in the appearance of the bile was observed to be produced by the calomel: but it was very generally noticed, that, while the fluids contained in the small intestines were of a yellow or orange colour, the contents of the large bowels were dark coloured.

3. It appears to excite the action of the cutaneous exhalants, and thereby to augment the insensible perspiration.

4. The last, and perhaps the most uniform, of its physiological effects on the secretory organs, is its well known operation as a sialogogue.

5. It exerts an irritant effect on the nervous system generally, and more particularly on the gastro-intestinal nerves: hence its limited efficacy, and frequent injury, in diseases and habits characterized by great nervous irritability or depression.

6. It excites and increases the physiological actions af the arterial capillaries. This effect was strikingly exemplified (in the experiments to which I have referred) by the increased vascularity of the capillary vessels of the gastro-intestinal mucous membrane, accompanied, after large doses, by sanguineous transudation. It is probably by the augmentation and alteration of tonic contractility thus imparted, that its use tends to re-establish the interrupted circulation through these vessels, and thereby to diminish their enlarged diameters and reduce their morbid vascularity, when they are the seat of inflammatory action.

7. It lowers the vital (organizable) properties of the blood, and more particularly diminishes the quantity of its contained fibrine. From this action is presumably derived its special value in those forms and stages of inflammation in which these properties of the blood are morbidly increased, and in which there is a strong tendency to the deposition of coagulable lymph: hence, too, its contra indication in those varieties and stages of disease characterized by an opposite constitution of the blood; and its injurious effect in preventing the adhesive inflammation, which limits the extent, and facilitates the outlet of internal suppuration.

It is probably to a combination of the two effects last specified, that we are most chiefly to ascribe the acknowledged efficacy of calomel as an antiphlogistic remedy: and in proportion as vascular action and the vital properties of the blood exceed, or fall below, the healthy standard, may we expect to derive greater or less benefit from its administration in inflammatory affections.

8. It increases the action of the absorbents. Hence its utility in promoting the absorption of certain morbid inflammatory exudations, whether fluid or more solid, whether effused on the surface or into the texture of organs, and whether the result of acute or chronic action: hence, also, its injurious operation, in many instances, in accelerating and extending ulcerative absorption; and hence, finally, the necessity of suspending its exhibition in all instances in which its use, instead of promoting the re-

moval of the morbid depositions for which it is administered, is found to be only causing interstitial absorption of the healthy tissues and consequent emaciation.

9. In addition to the more defined effects abovementioned, its continued use, in small doses, is supposed, on apparently just, but less obvious, grounds, to have the effect of arresting certain kinds of morbid action, and of morbid alteration or degeneration of structure, unaccompanied by inflammatory action. But more accurate and extended experience is still required to enable us to distinguish the forms of disease here alluded to, in which it is said to be useful, from those varieties (malignant or otherwise) in which it is found to be positively injurious.

1. *Dysentery.*—There is no point in practical medicine upon which a greater diversity of opinion has prevailed than regarding the utility, or otherwise, of administering calomel in dysentery. Such discrepancies would admit of some explanation, were they found to exist between medical men who had acquired their experience in different climates, or among different classes of subjects, as for instance, between the practitioner in the moist, low, maritime climate of Bombay, and one on the dry, elevated, inland plains of the Deccan; or between those who had been in medical charge of Regiments composed principally of young recruits or of soldiers who had never before suffered from dysentery, and others whose clinical experience consisted of men long exposed to a tropical climate or suffering from relapses of the disease. But when we find the most opposite conclusions deduced by men of equal powers of observation who have practised, or witnessed the practice, in the same Hospital, or who have perused the same recorded statements, we are utterly at a loss to explain or reconcile their differences.*

Amid such conflicting evidence, the inexperienced practitioner looks in vain for any fixed principle to regulate his practice. And hence his use or disuse of the remedy in after years depends, in many instances, on the fortuitous results of his first trials of it. Thus those who happen to have prescribed it in cases favourable for its administration, have too often ex-

* The three practical writers of highest authority in this country, hold different opinions on this most important point. Dr. Johnson recommends frequently repeated doses of calomel, and the speedy induction of salivation.—Mr. Annesly advocates large doses of the same medicine at longer intervals, with the daily use of purgatives, and the avoidance of salivation; while Mr. Twining asserts, that either of these plans, if generally adopted in Bengal, would very frequently destroy life.

tolled it as (after depletion) the one thing needful; while others, who have used it under circumstances unfavourable to the development of its good effects, have too frequently lost confidence in its virtue, and been thereby deterred from its subsequent employment.

The administration of calomel in dysentery must have reference conjointly to the local or anatomical, and to the constitutional, characters of the individual case submitted for treatment. Among the varying forms and types which the disease assumes, we find that in every case there is either a morbid inflammatory action which requires to be arrested — to be re-absorbed, or a morbid structural lesion to be repaired. But these local affections (whether separate or combined) may be accompanied by indications of an increase of vascular action and plethora, as in persons of a phlogistic habit, or by a diminution of vascular action and power, and a lowered condition of the blood, as in persons of feeble, relaxed, constitution; or by a special morbid diathesis, as the tubercular, scrofulous, scorbutic, or cachectic.

Keeping in view these morbid conditions, local and constitutional, in connection with the physiological effects of calomel previously specified, and with recorded experience, we may perhaps discover some general principles, which, though not of universal application, may nevertheless be found safe and useful guides for the regulation of our practice.

1. Calomel is particularly indicated in the incipient stage of acute dysentery, in which the local affection is characterized by inflammatory vascularity, and sanguineous extravasation, with an increased and morbid secretion from the mucous surface of the bowels, without the co-existence of the local effects or terminations of a more advanced stage.

To ensure its success, however, or rather to prevent its being positively prejudicial, it is of indispensable importance that its use should be preceded by adequate vascular depletion. When the patient is strong, or of sanguine temperament and a plethoric habit, the presence of febrile action will not fail to point out the appropriate remedy; but, even in the absence of general vascular excitement, the reduction of capillary action and plethora by free (and, if necessary, repeated) leeching, either over the abdomen or to the anus according to the seat of disease, forms the first and most important element of any mode of treatment, but in an especial degree of the treatment by calomel.

After suitable depletion there will remain a state of local capillary distention, with partially obstructed capillary circulation, and tendency to sero-albuminous or fibrinous deposit, and it is precisely at this stage, that the good effects of calomel are pre-eminently displayed. By its peculiar

effect on the blood and on the action of the capillaries, before referred to, it tends to arrest the morbid action and re-establish the healthy circulation through these vessels; and by increasing the abdominal secretions, to relieve their morbid vascularity. In this latter effect its beneficial agency is aided by castor oil or other mild aperient; while its injurious action on the nervous and muscular tissues should be counteracted, and the morbid irritability of these textures should be subdued, by combining it with a full dose of opium.

2. Calomel is also beneficial at a later stage of the disease; the stage of inflammatory effusion (whether serous, albuminous, or fibrinous) with consequent thickening or softening of the mucous or sub-mucous tissue of the bowels, and morbid adhesions of portions of the intestine to each other, or to contiguous viscera. Its good effects at this stage might have been inferred both from the physiological effects of the medicine on the secretory, capillary, and absorbent vessels, and from its experienced properties in analogous diseases of other organs better fitted to display its action. The great difficulty is to form the diagnosis. In this we shall derive quite as much assistance from an accurate knowledge of the patient's constitution before his illness and of the mode in which it is affected by the disease, as from careful attention to the local symptoms: and the more urgent may have been the necessity for bleeding at the commencement of the attack, so much the safer and more beneficial will be the subsequent administration of calomel.

3. The presence of abdominal venous plethora, either general or partial, during any of the stages of dysentery that have been referred to in the preceding observations, will generally indicate the necessity or utility of the occasional use of calomel. Whenever, therefore, there are general abdominal fulness and heat, with a furred tongue, or a sense of fulness and aching over the sacrum, weight about the lower part of the rectum which is relieved by resting on a pillow, or a sense of fulness and uneasiness in the right hypochondre or the epigastre, with scanty secretion of high coloured urine, we shall find that the classes of symptoms now described are almost invariably relieved (after suitable depletion) by a full dose of calomel and opium, followed by an aperient, and repeated according to the circumstances.

4. When the stage of inflammatory disorganization has arrived, (whether ulcerative, suppurative, or sloughing), calomel must always be considered to be of doubtful efficacy, and in the great majority of instances may be expected to be positively prejudicial.

If it be considered that intestinal ulceration is generally met with either

at a late stage of a first attack of dysentery, or (as more frequently happens) at an earlier period of some subsequent relapse; that the local morbid process is pre-eminently one of morbid action without power; and that the organizable properties of the blood are lowered; and if it be further borne in mind that the subjects of ulceration are generally of weak or scrofulous constitution, and that in many of them there is a mixture of nervous irritability and vital depression which is singularly inimical under any circumstances to the favourable operation of calomel, we shall have some difficulty in fixing upon any of the physiological or therapeutical properties of that medicine from which we shall be warranted in anticipating a beneficial influence from its administration. On the other hand, theory would lead us to apprehend that in very many cases it would prevent (what we are generally anxious to induce) the exudation and organization of lymph on the surface of the ulcers; and that it would accelerate (what we are anxious to arrest) the extension of the ulcerative absorption. And we find, in point of fact, that a persistence in its use not only aggravates the local symptoms (producing irritation, extension, or sloughing of the ulcers,) but in many instances induces an irritative febrile action, with great vital prostration, and eventually permanent impairment of the constitution: while in less favourable cases, and particularly in persons of scrofulous diathesis, it too often produces either rapid destruction of the intestinal tissues or suppuration of the substance of the liver.

The use of calomel when administered under the circumstances just specified, is usually justified on the principle that in dysentery there is a specific morbid action, which mercury has a specific power in controlling. In accordance with this opinion its use is diligently persevered in until the system is brought under its influence, without reference to its intermediate effects on the bowels or constitution, or I ought rather to say, the non-improvement or aggravation of the symptoms is considered to indicate the necessity for a more speedy induction of the constitutional effects of the medicine.

But even the admission (which, with our present knowledge, I should consider a dangerous admission,) of the specific doctrine both of the disease and of the remedy, would scarcely justify the treatment now referred to, even in the management of syphilis, for the cure of which, beyond all other diseases, mercury may be considered to be pre-eminently a specific, when occurring in feeble irritable constitutions, similar to those which are the usual subjects of ulcerated bowels, the use of this medicine requires constant watching, and is invariably suspended, when the ulcers assume an irritable, phagedenic, or sloughing appearance, particularly if accompa-

nied by hectic symptoms and great prostration. How much more imperative, then, ought to be the abandonment of this remedy in dysenteric ulceration, when the local disease appears to make progress, and the constitution is evidently giving way, under its influence.

Having considered the indications for the use or disuse of calomel furnished by the anatomical signs and local symptoms of dysentery, it remains to notice those derived from its constitutional characters. And it may be safely affirmed, that it is upon the careful and anxious adaptation of the remedy, not less to the abstract disease than to the patient who is the subject of it, upon our personal knowledge of his constitution, the character of his former illnesses, and the effect of remedies upon them, in short upon that individual (not numerical) experience, which was in former times so much valued both by patient and practitioner, that the success of our treatment will very materially depend.

1. If the constitution be healthy and robust, or if there be excess of vascular action; and if the patient be of recent arrival in the country, and has had no previous attacks of the disease, we may in general anticipate benefit from the occasional administration of calomel. It is not alone that such constitutions are more favourably affected by the medicine, though this is by no means unimportant, but it is also, and more especially, because the disease in such patients is generally attended with that condition of the blood, and, if not early arrested, is most likely to produce those local effects, which calomel is so peculiarly calculated to remove. It is of indispensable importance however, that its first exhibition should be preceded by the required vascular depletion. This, I am aware, is the general practice. But I do not here allude simply to the efficacy of depletion as an antiphlogistic remedy; but also to its value as an essential preliminary to the safe and successful use of calomel. For cases may arise in which it may be supposed by those who advocate the direct sedative action of this remedy that no injury can result (further than that arising from loss of time) from administering one or two doses until the precise nature and extent of the disease shall be more fully developed: whereas, if its stimulant as well as alterative operation on the capillary vessels be admitted, it follows that every dose that is exhibited before vascular action is adequately reduced by depletion, must necessarily aggravate, instead of relieving, the disease, and increase its tendency to terminate in ulceration or suppuration.

2. If the patient, on the other hand, be of a naturally feeble, and relaxed habit, or if the vascular system has been much lowered from protracted residence in the country or from pre-existing disease, we have a

state of constitution unfavourable to the beneficial action of calomel, but not directly contra-indicating it, while the local affection may be of that character which this remedy is well fitted to correct and remove. To such cases no general rules can apply: each individual's case must be judged and studied by itself. It must be used with great caution, regard being had to the possibility of converting a state of local phlogosis, with or without morbid effusion, into disease of an ulcerative type: and when we are in doubt as to its propriety, we shall do well to prescribe a milder preparation of mercury.

3. When, in addition to constitutional debility, there are indications of a tubercular, cachectic, or other special morbid diathesis, and if it be a case of relapse, and the previous attack has been treated by mercurials, (one of the inconveniencies of which is the pre-disposition which it gives to such relapses,) under such circumstances we have a modification of disease, in which the use of mercury as a general rule, is distinctly contra-indicated, both from constitutional and local causes. The morbid states of constitution here referred to, it is well known, frequently originate in the use of mercury, and are in general injuriously affected by that medicine under any circumstances: while the local dysenteric disease, in such subjects, is usually modified in its characters, affects principally the mucous glands and follicles, and shews a strong tendency to terminate in a low intractable form of ulceration, which calomel may be expected to accelerate and aggravate.

In this form of the disease (usually characterized by wasting of flesh, muscular weakness, and nervous irritability or exhaustion, with the addition frequently of hectic symptoms) in which the use of calomel is so generally hazardous, Ipecacuan as is well known, affords a valuable resource, no less than in the more phlogistic types, after the further use of the former remedy has become unnecessary or inadmissible. And some experiments, which I have recently taken occasion to make with this medicine, seem to shew, that its physiological action on the capillary and secretory vessels of the intestinal mucous membrane is analogous, though inferior in power, to that of calomel; and that it ought, therefore, to be administered on a similar principle, that is, in full doses (so as to direct its action to the intestinal capillaries instead of the cutaneous exhalants) combined with full doses of opium, repeated at considerable intervals, and alternated with aperients.

But even in this atonic form of dysentery, symptoms may occur, (as

the absence of feculence in the discharges*) for which two or three doses of calomel, combined with opium and camphor, may be given with safety and benefit. As this remedy, however, is in such cases, administered, not in the vain hope of curing the disease by it, but for the purpose of fulfilling a special indication, its use ought not to be persevered in, if it fail in accomplishing the desired object. When we find, on visiting our patient after a dose of calomel, that he has passed a more quiet night, and that there has been adiminished frequency and increased feculence of the evacuations, even though a great deal of faintness and prostration (as some times happens) may have attended its operation, we shall be encouraged to repeat it, provided there be a clear indication for so doing, taking care to administer due nourishment, and even stimulants if necessary, during its operation. But on the other hand, where the morbid character and frequency of the evacuations increase rather than diminish, with a red brown tongue, a retracted abdomen, and an irritative action of the heart and arteries; and particularly when, in addition, the patient *feels* that the medicine is doing him harm rather than good, under such circumstances its discontinuance cannot be too imperatively urged.

The two sets of cases now referred to; opposed as they are to each other in their constitutional characters, may present analogous anatomical characters: but they nevertheless constitute two widely different diseases for all the purposes of medical practice. Hence the indispensible necessity of making each case the subject of distinct study. And above all is it important to bear in mind (what is too often lost slight of) that the use of calomel in dysentery is generally, if not invariably, productive either of positive benefit or of positive injury; that we can never be assured of its precise effect in any instance until it has been tried; and that it is there-

* The nature of the morbid action by which the yellow feculent matter so frequently found in the small intestines in dysentery, suddenly and entirely loses its feculent character, and is converted into a dark brown watery fluid or other morbid product, on passing into the colon and rectum, has not hitherto been explained, nor has the phenomenon itself been sufficiently dwelt upon by practical writers. And yet it is one of great practical importance. It shews that the entire absence of feculence in the discharges may arise, neither from the suppression of the biliary and other secretions into the small bowels, nor from the retention of fæces in the upper part of the canal; and it further shews that the feculent evacuations which follow the administration of one or two full doses of calomel are not always to be ascribed to a restoration of the biliary secretions produced by that medicine, but may be the result of its operation on the morbid capillary action of the large intestines, whereby the healthy feculence passes through them unchanged. And the same effect is frequently produced by full doses of Ipecacuan.

fore incumbent upon us carefully, to observed the result of its first trials, and to be guided thereby in regard to its subsequent repetition.

I conclude this part of the subject with a brief allusion to the most eligible mode of administering calomel in dysentery. In the first stage, our object being to increase the abdominal secretions and to produce a direct antiphlogistic effect on the affected capillaries, it ought to be given in full doses (about ten grains) and at considerable intervals, combined with two or three grains of opium. Notwithstanding the diversity of medical opinion which has at different times prevailed regarding the use of opium in dysentery, it is now very generally admitted to be a valuable auxiliary remedy, when conjoined with such medicines as act on the capillary or the secretory functions of the bowels. Its conjunction with calomel is peculiary required, both to counteract the local and constitutional irritating action of that medicine, and also to subdue the morbid irritability of the nervous, muscular, and capillary tissues of the bowels, which constitutes an important element of the disease. The exhibition of calomel ought also to be alternated with frequent and moderate doses of mild aperients (as castor oil in mucilage of gum arabic), not simply to remove feculent accumulation (which rarely exists), but also and more especially to aid its operation in restoring the normal secretions from the mucous surface of the bowels, and thereby to promote the resolution of the disease.

When prescribed at a later stage our object will be rather to obtain its alterative effect both on the secretions and the capillary circulation ; and probably a preference will then be given to the form of blue pill given in smaller doses and at shorter intervals, and combined with a smaller proportion of opium. Its action will now be materially promoted by combining it with Ipecacuan and taraxacum, and in the atonic form of the disease, with camphor and quinine.

## Article XIII.

### *Annual Report of the 25th Regiment, N. I. for the year* 1841.*

By A. Wright, Esq.

Presented by the Medical Board, June, 1842.

General Observations.—In reporting on the state of health of the 25th Regiment N. I. it will not I trust be out of place to mention the service in which the corps has been employed during the past year.

On my joining the corps in the beginning of March, it was stationed at Kotra in Cutch Gundava; on the 29th we left, proceeding along the base of the Hala mountains, and after a fatiguing march, we arrived at Dadur on the 6th April; distance 72 miles. Halted one day, and on the 8th accompanied by the wing of H. M. 41ts Regiment, 1st Troop Horse Brigade, 3rd Company, 1st Battalion of Foot Artillery, we marched on route

* *Stationed at Quetta.*

| | |
|---|---|
| Strength | 1062 |
| Included in the returns | 909 Dec. 31, 1841. |
| Absent on command, beyond the division or on leave | 153 |
| Total | 1062 |

*Number of Sick.*

| | |
|---|---|
| Remained 31st December 1840 | 71 |
| Admitted | 1769 |
| Discharged | 1775 |
| Died in Hospital | 28 |
| Remaining 31st December 1841 | 37 |
| Average daily number of sick for the year | 6 |
| Average number of convalescents | None |
| Died without receiving medical treatment | .. |
| Changes since 31st December 1840 | .. |
| Recruits joined 1st January to the 31st December 1841 | 93 |
| Discharged from the service on account of disease | 3 |
| Discharged from the service on account of other causes | 5 |
| Invalided | 10 |
| Pensioned | 26 |

to Quetta via the Bolan Pass. On arriving at Seriab we were ordered to proceed to Moostung, where we arrived on the 19th; the Regiment remained here until the 15th of June, when we left for Kelat, where we arrived on the 20th. We were at Kelat until the 1st October, when we marched on route for Dadur via the Bolan Pass, halted for fourteen days at Moostung, and arrived a Dadur on the 30th; here we remained until the 20th December when we were ordered to proceed to Quetta, where we arrived on the 26th.

The whole of the countries, traversed on this route from Kotra to Kelat, agreed in their aridity and desert aspect; as also in the nature of their soil, which is a deep, rich alluvial mud, inclosed in valleys between abrupt, high, barren, mountains; but their elevation above the level of the sea, varies very materially; Cutch Gundava is quite a low country, whereas the valleys of Moostung and Kelat above the Bolan Pass, have an elevation upwards of six thousand feet. In consequence the temperature varied very much; at Kotra and Dadur, the days were very hot,—the thermomenter rising to 100 in tents; in the Pass it suddenly became cold, the nights were raw and chilly, and on two occasions snow fell; the weather remained cold and wet, until the middle of May. At Kelat in June, July, and August, the days were very hot, although the nights remained pleasant. In September it suddenly became cold, more especially in the mornings, and towards the end of the month it was freezing. In October the days were pleasant, but the nights very cold, above the Pass; but at Dadur the heat was still great during the day.

With the exception of the months of July, August, and part of September, both Officers and men have been exposed to all the varieties of climate in tents; during the above mentioned months whilst stationed at Kelat, we occupied houses in the fortress.

From the varieties of climate, and arduous duties in which the Regiment has been employed, it would be difficult to award to any one set of causes its due share in the deterioration of the health of the Regiment.

PREVAILING DISEASES.—Bowel complaints and fever of various types have formed the bulk of the cases that have been admitted into the hospital of the Regiment during the past year.

*Fevers.* The fever most frequent in this country is an intermittent, one chiefly quotidian, a few tertian, and still fewer approaching the form of remittent; in general unaccompanied with any particular visceral derangement. In July and August, whilst at Kelat, a few cases were complicated with diarrhœa and congestion in the brain, and most all of them with

jaundice; an emetic on admission followed by a dose or two of calomel and pulvis antimon. or antimon. tart. with saline mixture and afterwards purgatives, are what I usually prescribe until the skin becomes cool. The quinine is then given or pulv. cinchonæ, and the disease is generally subdued in the course of a few days; in a few cases where the quinine in very large doses has failed to stop the disease, I have found, combining it with sulph. zinci hase the desired effect. I have very seldom had occasion to bleed; unless when there is determination to the brain, in sepoys I always prefer topical to general bleeding unless the symptoms are very urgent. Where the tongue remains brown and dry with symptoms of congestion in the brain, I give calomel with pulvis antimon. and introduce mercury into the system by friction, until the gums become tender, at the same time giving an occasional dose of extract. colocynth. at bed time.

Total number of fevers admitted during the year is nine hundred and sixty nine; of which seventeen have died.

*Hepatitis.*—No case of this disease has occurred during the year.

*Dysentery.*—This has been a common disease amongst the sepoys, and several cases have proved very obstinate; the treatment I have generally pursued is, on admission to prescribe a full dose of calomel and opium, following it up with a dose of castor oil. I then give the dysentery pills of pulvis Ipecac. pil. hydrarg. and opium or pulvis Ipecac. extract gentian and extract hyoscyami with a dose of castor oil, every alternate morning. Should there be much tenosmus, with bloody stools and tenderness in the abdomen, I apply leeches and blisters; if the disease does not yield to this treatment, I give calomel at night, and introduce mercury into the system by friction, and when the evacuations have become natural, begin with astringents and tonics. The sequelæ of the disease are often more obstinate and unmanageable than the disease itself, and the patient too often relapses, and after long lingering dies from absolute debility. The total number of cases of dysentery and diarrhœa during the year has been one hundred and thirty-nine; of which, eight have terminated fatally.

*Rheumatism.*—This has been a common disease, but unless in one or two cases, I have always found it very manageable. In the acute form I give diaphoretics, pulvis Ipecacuan. comp. vin colchici, &c.: in chronic cases I have found the hydriodate of potass an invaluable remedy in either curing or at least very much relieving the disease.

*Cholera.*—I am happy to state that no instance of this disease has occurred in the Regiment.

SURGICAL CASES.—In field service it may be expected that something may have occurred worthy of notice amongst the surgical cases, but such is not the case. On my arrival at Kotra I found a number of ecthymatous ulcers, and they have continued to prevail more or less during the year: they are much more common in Cutch Gundava than in this country; they appear chiefly on the lower extremities and hands, though no part of the body is exempt.

The treatment I have found most successful is to destroy the diseased structure with lunar caustic; afterwards applying a poultice for a few days, until the sore puts on a healthy appearance; I then apply straps of adhesive plaster with a bandage, giving the patient an occasional dose of an aperient; they in general readily heal up by this treatment. I have found change of air have a good effect, when other means had failed.

*Camp; Quetta, 13th January,* 1842.

## Article XIV.

### *Annual Report of the Civil Surgeon of Ahmedabad for the year 1841.** By S. Sproule, Esq.

Presented by the Medical Board. May, 1842.

The *Jail* at this station has been healthy during the year. No epidemic has appeared amongst the prisoners who have suffered merely from those diseases incidental to the season and to which natives under any circumstances are liable. The constitutions of many of the prisoners

| | |
|---|---|
| *Average daily number of prisoners in the Jail | 745 |
| Police of the city | 288 |
| Sebundies | 52 |
| Prisoners at Sadra | 40 |
| Military detachment at Sadra | 66 |
| Guzerat Koolie Police corps | 590 |

*Number of sick in the Jail.*

| | |
|---|---|
| Remained on 31st December 1840 | 28 |
| Admitted in 1841 | 623 |
| Discharged | 602 |
| Died | 31 |
| Remaining on 31st December 1841 | 18 |

*Number of sick in the Civil and Insane Hospital.*

| | |
|---|---|
| Remained on 31st December 1840 | 55 |
| Admitted in 1841 | 308 |
| Discharged | 294 |
| Died | 10 |
| Remained on 31st December, 1841 | 59 |

*Number of Sick in the Guzerat Koolie Police Corps.*

| | |
|---|---|
| Remained on 31st December 1840 | 18 |
| Admitted in 1841 | 418 |
| Discharged | 416 |
| Died | 2 |
| Remaining on 31st December 1841 | 18 |

*Number of sick in the Political Department at Sadra.*

| | |
|---|---|
| Remained on 31st December 1840 | 3 |
| Admitted in 1841 | 222 |

have suffered from the effects of opium to the use of which they had become habituated, and some affirm that previous to their coming into jail, 3i. to ii. has been their usual daily allowance. It would not be altogether safe to deprive such persons suddenly of the drug, but even although the quantity may be gradually reduced and never entirely taken away from them, still the constitution suffers so gradually and imperceptibly as to render the result of disease, however slight, very uncertain. Such patients do not recover or regain their strength as speedily as one would suppose, as even a slight attack of fever or bowel complaint renders them invalids for weeks. This however is more particularly applicable to those men who returned here from the Tanna Subsidiary Jail, all of whom succumb very much to disease however slight. The tone of their constitutions is very much lowered, and it was amongst these men, the old and infirm, and men whose constitutions were worn out either by the effects of opium or other causes previous to their coming to the Jail, that the mortality has taken place during the year. But in almost all the cases I have witnessed, death seemed to be more attributable to the infirmity and constitutional debility previously existing, than to the effects of the disease which the patient laboured under previous to his death, as the symptoms were severe, a slight fever or bowel complaint carrying off the patient in a few days after admission. The accompanying cases No. 1 and 2, afford examples. One man died from effusion into the chest occurring during remittent fever, and another died of cholera which occurred during convalescence, from dysentery. He died after twelve hours from the first appearance of the disease, and resolutely refused to take any medicine whatever: he would not swallow it when put into his mouth.

During the last rains, I have observed a great tendency to sloughing of the cornea in men of worn out constitutions and feeble habit of body. It

| | |
|---|---|
| Discharged | 216 |
| Died | 3 |
| Remaining on 31st December 1841 | 8 |

*Average daily number of sick.*

| | |
|---|---|
| In the Jail | 24 |
| In the Civil and Insane Hospital | 56 |
| In the Guzerat Koolie Police Corps | 15 |
| In the Political Department at Sadra | 8 |
| Average number of convalescents | None |
| Died without receiving medical aid | None |

*General Observation.*

*Prevailing diseases.*

Remittent and Intermittent Fever and Bowel Complaints.

was certainly not the result of inflammation as it was not till the third or fourth day after, that a subacute inflammation came on, followed by serous deposit under the conjunctiva. Four cases of this description occurred; three of the men had been at Tanna; two were in hospital; one came in with slight fever, the other with slight dysentery; both were convalescent and in the evening their eyes were quite well; next morning however matter was formed betwext the laminæ of the cornea which sloughed until the humours were discharged. Both these men died in four or five days after, exhibiting no other symptoms than extreme emaciation and debility. The other two men were not labouring under any other disease; they went into their cell quite well without any feeling of uneasiness about the eyes, but in the morning the corneæ of both eyes were in a sloughy state; there was no pain or irritation attending this state of the cornea, and these were only slight even on the third or fourth day, when a kind of subacute inflammation made its appearance, followed by serous deposit under the conjunctiva. The treatment consisted in the application of nitras argenti to the slough with a view to cause its separation and induce healthy action, constant counter irritation on the temples and nape of the neck, together with quinine and other tonic remedies, with a more generous diet than the man had been accustomed to. When serous infiltration had taken place, scarifications from the circumference towards the centre of the eye-ball were had recourse to, followed by fomentations. As soon as the appetite was improved, meat diet was allowed them; one of these men had formerly lost one eye under similar circumstances. Ulcers of the cornea also required constitutional treatment similar to the above, before they could be induced to fill up.

The greatest number of deaths occurred in the last five months of the year; during this period, dysentery, diarrhœa, and fevers, were prevalent amongst the prisoners, and the old, infirm and debilitated subject was carried off by a slight attack of either one or other.

*Remittent fever* was the only disease of a severe character which appeared amongst the prisoners; intermittents were not generally severe, but the patient did not get rid of the fever speedily, and he was usually left in a debilitated state. In my treatment of remittent fever, I have used the tartar emetic solution with great advantage, giving small doses of calomel and antimonials at bed time, followed by a purgative in the morning, the patient being kept under the influence of the tartar emetic during the day. In two or three days there is generally complete remission of the fever, when quinine is given to ward off an attack; in a few days more the type of the fever either becomes changed to that of the intermittent, or the patient remains

entirely free from it. The cure is completed by substituting for the quinine, bark or some tonic bitter infusion with a mineral acid and a more generous diet. I have experienced very good effects from the administration of tartar emetic in the remittent fever of natives, and have used it extensively in the different hospitals and departments during last season. It may cause vomiting once or twice, but this may be considered more beneficial than otherwise, and I have only seen two cases during the season (one in the Jail Hospital and one in the Hospital of the Koolie Police Corps) where I was obliged to discontinue it on account of the vomiting and purging which were always induced by its administration. Local affections are of course to be met by the local abstraction of blood and application of blisters, general bleeding I have not been obliged to have recourse to in any case, and of all classes of patients it is the least applicable to prisoners. I may here mention that in severe cases, I do not wait for the complete restoration of the natural alvine evacuations and a clean tongue for the administration of quinine, but whenever a complete remission of the fever takes place, I give it with the view of warding off or lessening the subsequent attack and making a break in the disease. In no case have I had cause to regret this practice. The intermittents presented nothing peculiar. Dysentery was not in general formidable, occurring in a patient with a tolerable constitution, and it was only that class of men already mentioned to whom it proved fatal; and they did not seem to die from the effects of the disease but from pre-existing constitutional causes. The same is applicable to diarrhœa. The mortality has been rather less than during the previous year.

The system of dieting seems to work well, and all the prisoners have had warm clothing served out to them at the commencement of the cold weather. 651 cases have been treated during the year, and 31 deaths have occurred being a little more than $4\frac{3}{4}$ per cent on the cases treated, and above 4 per cent on the average strength of prisoners. The mortality has been greater in proportion amongst those men who have returned from Tanna, than amongst the other prisoners. The following statement refers exclusively to them.

| Remaining in Jail on 1st January, 1841. | Discharged from Jail during the year. | Remaining in Jail on 1st January 1842. | Died during the year. | Admitted into Hospital during the year. |
|---|---|---|---|---|
| 168 | 55 | 101 | 12 | 134 |

Thus the mortality amongst these men has been 9 per-cent on the ad-

missions, whilst it has been less than 3½ per cent on the admissions amongst the other prisoners in the Jail.

In the Civil Hospital some few operations have been performed since I have had charge. I have operated on four cataracts and amputated one penis, in all cases with complete success and relief to the sufferers; various other minor operations have also been performed. Four cases of attempted poisoning have been brought to the Hospital, three from opium and one from datura stramonium; in all the stomach pump was applied with complete success and the patients eventually recovered. Some bad accidents have also been admitted into the Hospital during the year.

The Dispensary practice continues to be considerable during August, September, and October; the number of inhabitants who applied for and received relief has been great.

In the Political Department at Sadra and in the Hospital of the Koolie Police Corps nothing particular has occurred; intermittent and remittent fever and bowel complaints have been the prevailing diseases.

This has been a healthy season altogether throughout this province with the exception of the Dholka Pergunna, where fever was very prevalent, during October and November, and some few cases proved fatal. I sent at different times supplies of medicine for the use of the inhabitants on the requisition of the Collector. The inhabitants of this, I am informed, suffer more at that season than those of any other Pergunna under the Collectorate. In this city fevers and bowel complaints were prevalent during and after the rains, but in no very inordinate degree.

## Article XV.

### *Contributions to Vegetable Embryology, from observations on the origin and developement of the Embryo in Tropæolum Majus.* By Herbert Giraud, M. D. Edin. F. B. S. E. Ext. Mem. Med. Soc. Edin. &c. &c.

The rapid and unprecedented advances in discovery, which have marked the progress of human and comparative physiology during the last ten years, are in no department more remarkable than in that which relates to the production and developement of organized tissues; whether of the same, or of new and distinct organisms. In this field more than in any other, the labours of physiologists have been richly rewarded.

The researches of Baer,* Valentin,† Purkinje,‡ Krause,§ and Wagner,‖ on the continent, together with those of Allen Thomson,** T. Warton Jones,†† and the more recent observations of Dr. Martin Barry,‡‡ though many of their results differ in points of minor importance, have yet combined to render the history of animal embryology clear and consistent: so that we can now speak, with tolerable certainty, of the formation and mode of origin of the *germinal vesicle* and the *ovisac*, of the nature of the *Graafian vesicle*, and of the *true chorion*: of the relations of the *corpus luteum*: and of the precise period of the origin of the *embryo*, with the changes it undergoes during the progress of its developement. Much has also been done towards elucidating the manner of the production and growth of the tissues; and the almost contemporaneous discove-

* Baer, Lettre sur la formation del' Æuf. translated by Breschet, Paris, 1839.

† Valentin Handbuch der Entwickelungsge Schichte des Menschen, &c. Berlin, 1835.

‡ Purkinje. Encyelopädisches Wörterbuch, Band X. Berlin, 1834.

§ Krause, Müller's Archiv. 1837.

‖ Wagner, Lehrbuch der Vergleichenden Anatomie. Leipsig, 1834–5.

** Allen Thomson, Art. Generation in Todd's Cyclopædia of Anatomy and Physiology.

†† T. Warton Jones, Lond. and Edn. Phil. Magaz. September, 1835.

‡‡ Martin Barry, Philosoph. Trans. 1838-39-40 and 41.

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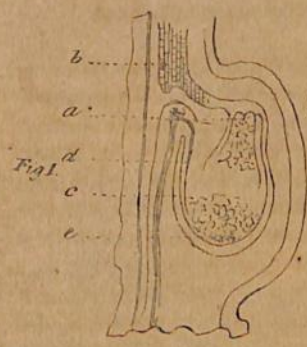


Fig I.

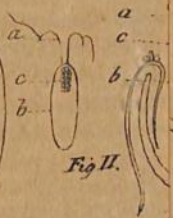


Fig II.

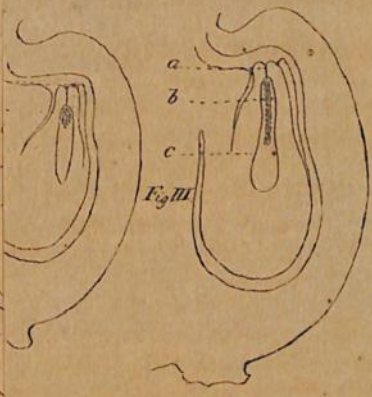


Fig III.

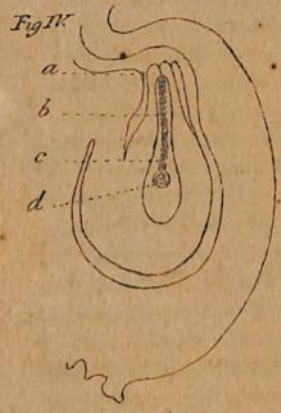


Fig IV.

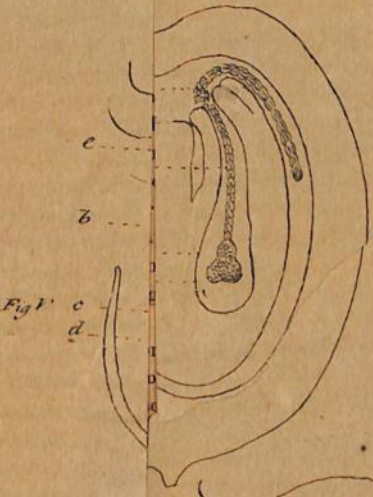
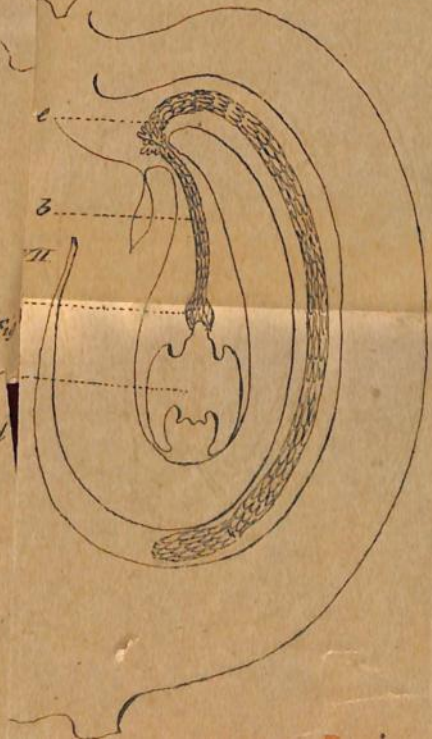


Fig V.

Fig VI



ries of Schwann * and Schleiden † have shewn how intimate is the correspondence between the structure and growth of animals and plants; and that in the developement of tissues the same phenomena are exhibited in both. In the vegetable kingdom the discoveries of Amici, Brown, and Brongniart, and the still more recent ones of Schleiden, Mirbel, Spach ‡ and Meyen, have disclosed a series of phenomena that were never contemplated in the days of Kælrenter, Gærtuer and Linnæus. But, whether from errors in observation, or from illegitimate deductions, the conclusions of these several phytologists have been so little accordant with each other, that the true theory of Phænogamic embryology is far from being clearly determined; for while, on the one hand Brongniart, Mirbel, Spach and Meyen, maintain the old view that the *embryo* is primarily developed in the substance of the *ovule*; Schleiden and Wydler, on the other, regard it as a body foreign to the *ovule* and taking its origin in the *anther cell.*

According to Schleiden:—" at a very early period of the developement of the ovule, a cellule from the interior of the *nucleus*, which originally differed not from the surrounding ones, is developed to an extraordinary degree and presses more and more on the surrounding tissue of the nucleus, which is then absorbed from within outwards. This cellule is the *embryo-sac* (membrana amnii. Malpighi, sac embryonnaire, Brongniart, Quintine, Mirbel:) which exists in all flowering plants without exception, even before impregnation. This embryo-sac contains a substance which is gradually transformed into cellular tissue; and being ultimately developed within the embryo-sac, forms (when not absorbed by the growth of the embryo) the *endosperm* or *albumen* of most authors. The *pollen tube* having made its way through the conducting tissue of the stigma, and having reached the ovule, penetrates the aperture in the teguments, traverses the summit of the *nucleus*, and following the intercellular passages, arrives at the embryo-sac. Having reached this point the pollen-tube presses before it the membrane of the embryo-sac, which is then folded all around it, so that the extremity of the pollen-tube appears to penetrate into

* Schwann Mikroscopische Untersuchungen uber die Uebereinstimmungen in der struktur und dem Wachsthum. der Thiere und Pflanzen. Berien 1838-39.

† Schleiden, sur la formation de l' ovule, et l' origine de l' embryon dans les phanerogames, Anu des Scien. Nat: 2nde Série. Botan. Mars, 1839.

‡ Notes pour servir á l' histoire de l' embryologie végétale par M. M. Mirbel et Spach Anu des Scien Nat. 2nde Serie. Botan, Avril. 1839.

the sac; though in reality it is outside of it. Thus inclosed the extremity of the pollen-tube enlarges into the form of an oval spheroid, and its contents are converted into cellular tissue; at its sides are formed the lateral organs or cotyledons, from which the extremity remains distinct, and is developed into the plumule. The portion of the tube situated above the embryo, and which is embraced by a duplicature of the embryo-sac, is gradually, but completely obliterated; so that the embryo is then left free within its sac. In this way the embryo is formed of two membranes: the indented embryo-sac, and the membrane of the pollen-tube. With these statements of Schleiden, the still more recent observations of Wydler * agree, except as regards the folding in of the embryo-sac, which this observer has never met with: but it appeared to him that the cavity of the sac elongated itself under the form of a straight canal, even to the summit of the ovule, and there opened in the *endostome* and received the extremity of the pollen-tube.

The importance of forming a determinate conclusion regarding the origin of the embryo is greatly enhanced by the influence it must have in affecting our notions of what are at present considered the male and female organs (stamens and pistils;) for if the above observations of Schleiden be correct, the anther must be considered as a female ovarium, and each grain of pollen as the germ of a new organism, being determined in its development by the secretions of the embryo-sac: this last structure therefore being held to correspond with the male organ.

In the most recent work on Structural and Physiological Botany (the "Leçons de Botanique of M. A. de St. Hilaire,) the indeterminate state of our knowledge regarding the origin of the vegetable embryo is pointed out, and the author concludes by saying, "Espérous que de nouvelles recherches achéveront de lever les doutes que l'on pourrait concevoir encore." With the hope of removing some of the uncertainties which are yet attached to this litigated question, and of gaining some certain information on many interesting, but yet undetermined points, I attempted the following observations on the mode of developement of the embryo in Tropœolum Majus, the results of which will I think materially contribute towards forming a true theory of phœnogamic embryology.

The extreme simplicity of the *ovarium* of the Tropœoleæ, their *monospermous carpels*, and the large size of their *ovules*, render the indivi-

* Wydler, Note sur la formation de l'embryon (extrait d'une lettre de M. Wydler, professeur à Berne communique par M. A. St. Hilaire a l'Academie des Sciences a Paris, October, 1838.)

duals of this family peculiarly fitted for observations of this kind, and in these respects they are resembled by their allies, the Geraniaceæ, and, in fact, by most plants with one seeded carpels.

The following observations are arranged under seven general heads, corresponding with as many progressive periods in the growth of the ovarium, extending from the completion of the anatropous developement of the ovule to the perfect formation of the embryo; a period extending from the commencement of the expansion of the bud to the complete formation of the fruit.

First Period. On making a perpendicular section of a carpel (just before the expansion of the bud) from its dorsum inwards towards the axis of the pistil, the solitary ovule is at the same time divided, and is found to have completed its *anatropous* developement. (fig. I.) Continuous with that part of the *columella* which forms the placenta, is a portion of rather firm cellular tissue enclosing a bundle of vessels and forming the so called *umbilicus*: this, with the vessels it encloses, descends in apposition with the placenta to form the raphè; (fig. I. a.) and, near the point where it terminates in the base of the ovule, the vessels gradually terminate in closed extremities. The nucleus has only one tegumentary membrane, at the apex of which is presented the exostome opening close by and to the outside of the umbilicus (fig. I. a.) The conducting tissue of the style may be traced between the columella, and that prolongation of the carpellary leaf which forms the style, into the carpellary cavity as far as the exostome, with which it is brought in contact by the anatropous developement of the ovule. (fig. I. b.) The vessels which proceed along the placenta, to form the raphè are spiral vessels and annular ducts; and, at the point at which they make a turn downwards towards the chalaza, many of them end in closed extremities, while the vascular structure of the raphè usually terminates in a single vessel. (fig. I. d.)

Second Period. (Fig. II.) During the expansion of the bud, before the dehiscence of the anther, and therefore before impregnation, a small elliptical cavity (fig. II. b.) appears near the apex of the nucleus, having a delicate lining membrane, formed by the walls of the surrounding closely approximated cells. This cavity is the *embryo-sac* (sac embryonnaire, Brongniart and F. G. F. Meyen; membrana amnii, Malpighi: Quintino, Mirbel) from the apex of which a minute canal may be traced through the nucleus to the exostome (fig. II. a.) At this period, the apex of the embryo-sac encloses a minute quantity of organizable mu-

cilage, containing many small bodies having the appearance and characters of cytoblasts. (c.)

THIRD PERIOD. (Fig. III). The apex of the nucleus is now inclined, and the exostome approximated to the axis of the pistil. The cavity of the nucleus (embryo-sac) is much enlarged and lengthened: its mucilage has disappeared, and in the place of it is formed *an elongated diaphanous utricle* (utricule primordiale, Mirbel; visicule embryonnaire; F. G. F. Meyen: l' extremite anterieure du boyan pollenique, Sehdeiden,) enclosing a quantity of globular matter (globulo cellular cambium, Mirbel: cytoblasts, Schneiden) (b.) This *primary utricle* is developed wholly within the embryo-sac, from whch it can be clearly seen to be distinct.

FOURTH PERIOD. (Fig. IV.) *After impregnation.* With the increased developement of the embryo-sac, the primary utricle, as it elongates, becomes distinctly cellular, by the developement of minute cells from the *cytoblasts* in its interior: while at the extremity next the base of the nucleus it is terminated by a spherical extremity consisting of numerous globular cells, (d.) The primary utricle, at this period, assumes the character of that organ described by Mirbel as the *suspensor:* and its spherical extremity constitutes the first trace of the embryo. The pollen-tubes are not found to descend into the carpellary cavity; but the *fovilla* with its *granules* is seen abundantly diffused through the passage leading from the style to the *exostome,* thus proving that impregnation has occurred.

FIFTH PERIOD. (Fig. V.) At this stage the spherical extremity of the suspensor enlarges and almost entirely fills the cavity of the embryo-sac; and it now becomes more evident that it constitutes the axis of the embryo. (d.) The suspensor is correspondingly lengthened by an increase in the number and size of its cells, while its upper extremity now protrudes through the apex of the embryo-sac, the apex of the nucleus, and through the exostome; from this, its upper extremity, there is a considerable developement of cells, many of which terminate abruptly and hang loosely in the passage leading from the style, while others unite in forming a process, which passes round the outside of the ovule (in the direction of its axis) into the carpellary cavity, and between the inner surface of the carpel and the outer surface of the ovule (e.) From the important functions which I believe this organ to perform, it may not be improper to point out more particularly its intimate structure. It is composed of from nine to twelve rows of elongated cells (*cylindren chyma*) and its

extremity resembles in its general appearance, and in the anatomical condition of its cells, the spongiole of a root. When the ovule is removed from its carpel, and slight traction is made upon this cellular process, the suspensor, with the attached embryo, may be withdrawn from the embryo-sac, through the exostome and apex of the nucleus; thus proving the perfect continuity of this cellular process with the suspensor, and through it, with the embryo itself.

Sixth Period. (Fig. VI.) The suspensor is now more attenuated; the cellular process with which it is organically united has reached the outside of the base of the ovule, and is of firmer consistence; the cells of its extremity abound in cytoblasts, shewing it to be yet progressing in its developement. With the growth of the embryo, two lateral processes are observed to proceed in opposite directions from the sides of its axis, forming evidently the first traces of the cotyledons (d.)

Seventh Period. (Fig. VII.) All distinction between the nucleus and its tegumentary membrane has now ceased, and the embryo-sac has one only envelope. The cellular process connected with the suspensor has become so much developed, that its extremity has passed around the base of the ovule, and is directed towards the axis of the pistil. The lateral processes of the axis of the embryo have become distinct fleshy cotyledons, extending backwards from their point of origin towards the radicle, as well as forwards in the direction of the plumule: both of which organs they enclose in corresponding depressions in their opposed surfaces (d.) With the developement of the radicle towards the exostome, the opposite extremity of the axis of the embryo, in the form of the plumule, extends towards the base of the ovule, but is still enclosed in the depression formed by the concavity of the cotyledons. At each side of this extension of the axis the first traces of the plumular leaves make their appearance, alternating with the cotyledons.

The subsequent changes consist chiefly in the great developement of the cotyledons, which ultimately come to occupy the whole cavity of the nucleus, filling the space usually taken up by the albumen, which is awanting in this natural family.

The results of the foregoing observations derive importance; 1st, from their tending in no slight degree to settle the question regarding the origin and mode of developement of the embryo; 2nd, from the light they serve to throw upon many obscurities relative to the morphology of the embryo; and 3rd, from the discovery of an organ, which from its anato-

mical relations, and apparent functions, would appear to be *the true organic placenta.*

I have shewn that the formation of the embryo-sac, and the developement of cytoblasts within it, take place at a period prior to the impregnation of the pistil: and that even the primary utricle itself, which Schleiden considers as the extremity of the pollen-tube, makes its appearance before the emission of the pollen from the anther, and before the expansion of the three lobed stigma; therefore the origin of that organ cannot be referred to the influence of impregnation; as had been already pointed out by Mirbel and Spach in the case of Zea Mays. At its first appearance the primary utricle is seen to be quite distinct from the embryo-sac, even at its apex, with which however it is brought in contact at a subsequent period, and ultimately even penetrates that membrane: so that in this instance at least the primary utricle can not result from a depression or involution of the embryo-sac; as has been maintained by Brongniart.

After the expansion and impregnation of the stigma, the pollen-tubes may be traced in the conducting tissue of the style, but not so far as the exostome; however, in the channel leading to this point the pollenic granules are found in abundance, and are doubtless brought in contact with the outer surface of the embryo-sac, through the exostome and the minute canal in the apex of the nucleus. As at this period the first trace of the embryo appears in the form of the spherical body at the inferior extremity of the primary utricle, which has now assumed the character of the suspensor, I am induced to consider the origin of this body as resulting from a peculiar process of nutrition, determined by the material or dynamic influence of the fovilla, conveyed through the medium of the primary utricle or suspensor; and, as it is through this organ that the embryo appears to derive its nourishment during the period of its developement, we should, from this function, as well as from its anatomical relations, consider the suspensor, as the true umbilical cord; and transfer to it the name of *funiculus* from that medium of connexion between the ovule and columella, which has erroneously been viewed as the umbilical cord: to this however I would apply the name of *podosperm*, as denoting its relation to the ovule. As it is necessary that an umbilical cord should be organically united with the embryo, the impropriety of considering the organ described by Malpighi as the "*vas umbilicale*" in that light, will become sufficiently obvious. This structure consists of a minute cellular process extending from the base of the embryo-sac to the base of the nucleus, and has been found chiefly in the Cucurbitaceæ and Rosaceæ. It appears, however, to

be but a mere appendage of the embryo-sac, from which it takes its origin, and often never reaches the base of the nucleus, and cannot therefore be the medium of nutrition even to the embryo-sac. To this organ, therefore, it would be better to confine the name given to it by Dutrochet, that of the *hypostate*, as pointing out merely its anatomical relations.

The cellular process, I have described above as proceeding from the extremity of the suspensor (umbilicus) next the exostome, around the outer surface of the ovule, into the carpellary cavity, is an organ of unusual occurrence; and, as far as I am aware, its functions have never been noticed. From its mode of growth and structural relations it must be of very essential importance to the origin and developement of the embryo. It has recently been pointed out by F. G. F, Meyen * that in the great majority of instances, the pollen-tube, after having penetrated the exostome is brought in contact with the apex of the embryo-sac, with which it there contracts an adhesion: from this period the changes consequent on impregnation date their commencement, and under the direct influence of this immediate application of the fovilla to the embryo-sac, continue with uninterrupted regularity. But in the case of Tropæcolum Majus, as the pollen-tubes never reach the embryo-sac, some additional means are required to ensure such a *continuance* of the action of the fovilla on the primary utricle, as is necessary for the developement, at its extremity, of the spherical cellular body, which subsequently becomes the embryo. This action then, I believe to be effected by the projection of this cellular process from the primary utricle: which by being immersed (so to speak) in the fovilla, is made the medium for the transmission of the latter to the primary utricle, and, through it, to the embryo itself: for which office the structure of its extremity (so like the spongiole of a root) renders it peculiarly fitted. But if not concerned in the impregnation, it must at least be so in the nutrition of the embryo; and since the chalaza is the medium of nutrition only to the nucleus and its membranes, it is easy to shew how erroneously vegetable physiologists have viewed it as the true organic placenta, the functions of which may with justice be ascribed to the structure I have pointed out; which, like the placenta in the animal kingdom, communicates with the embryo by means of a true umbilical cord.

I have noticed, in the preceding observations, that the first appearance of the cotyledons is accompanied by a corresponding elongation of the axis of the embryo, owing to an extension of its globular cells: so that the

* Meyen, Observations sur la Fecondation des Végétaux Anu des Scien. Nat. Avril 1841.

cotyledons necessarily arise from the axis of the embryo. Hence the opinion held by many morphological writers that "the axis results from a union of the cotyledons, or of their petioles," is proved to be without foundation; for the foregoing observations shew that the lateral projections, which constitute the first traces of the cotyledons are composed of cellular tissue developed on opposite sides of the axis of the embryo; and are therefore new formations, arising from determinate points, and deriving their nourishment from the substance of the axis.

# APPENDIX.

# APPENDIX.

## 1.

*Extract from a letter on the Sickness at Kotra in Upper Sinde, addressed to the Superintending Surgeon, from* W. T. Babington, Esq.

Presented by the Medical Board, May, 1842.

In January, 1841, I arrived at Kotra with the left wing 1st Light Cavalry (Lancers), and from that date until April, little or no sickness had occurred; about the latter end of this month, or the commencement of the hot season, a fever of a bilious remittent character broke out amongst the troops, attacking both Europeans and natives, which, if treated at an early stage, was easily subdued by the administration of purgatives, followed by tonics, such as arsenic, quinine, steel, &c. according to the state of the patient; but in consequence of the excessive heat of the place, patients were a very long time recovering from the debility caused by a few repeated attacks. It was not by any means of a fatal kind, only two or three casualties having occurred amongst the men of the wing under my charge, and even in these, organic disease had previously existed.

The deaths that took place to so lamentable an extent, were sudden and solely attributable to the hot wind which prevailed so severely during the months of June and July, that those exposing themselves to it during the day, were generally brought into Hospital either dead, or died in ten minutes after, presenting the symptoms of apoplexy; every treatment was adopted that I thought could be beneficial, such as bleeding, both general and local, the administration of cathartics and stimulating injections, the application of sinapisms to the feet, and in fact every remedy likely to lessen the accumulation of blood to the head, but death occurred so suddenly as not to allow time for the action of medicine.

In conclusion, I beg leave to state that I made every inquiry from the natives of the place, who suffered equally with ourselves, and who stated that even they themselves left the place during this most trying time of the year, nor could I learn that the present season had in any way been worse than former ones.

2.

*Table, shewing the comparative Means and Extremes of Rain-fall and Temperature, at Malcolm Peth, Paunchgunnee, Bombay, and Poona, during the Rainy Season of* 1842. By J. Murray, Esq.

Presented by the Medical Board.

| Months. | Amount of Rain. | | | | No. of fair days. | | | | Greatest daily fall of Rain. | | | | Mean Temperatnre. | | | | Mean daily variation of Temperature. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Malcolm Peth. | Paunchgunnee. | Bombay. | Poona. | Malcolm Peth. | Paunchgunnee. | Bombay. | Poona. | Malcolm Peth. | Paunchgunnee. | Bombay. | Poona. | Malcolm Peth. | Paunchgunnee. | Bombay. | Poona. | Malcolm Peth. | Paunchgunnee. | Bombay. | Poona. |
| 1842 | i. c. | i. c | i. c. | i. c. | | | | | i. c. | i. c. | i. c. | i. c. | ° ′ | ° ′ | ° ′ | | ° ′ | ° ′ | ° ′ | |
| June | 37 86 | 4 48 | 17 26 | 1 39½ | 2 | 14 | 5 | 23 | 6 10 | 1 42 | 6 0 | 0 28 | 65 8 | 70 3 | 85 2 | | 4 7 | 7 7 | 4 1 | |
| July | 117 76 | 24 93 | 23 06 | 5 94 | 0 | 3 | 3 | 15 | 12 74 | 3 61 | 11 0 | 1 42 | 63 2 | 68 0 | 82 9 | | 4 9 | 3 9 | 3 5 | |
| August | 77 75 | 12 24 | 37 16 | 3 8½ | 0 | 3 | 0 | 15 | 9 87 | 1 78 | 6 0 | 0 79 | 63 1 | 67 0 | 81 2 | | 3 4 | 4 3 | 4 8 | |
| September | 56 00 | 7 03 | 9 85 | 4 30½ | 1 | 3 | 6 | 13 | 7 32 | 0 61 | 3 0 | 1 45 | 65 5 | 68 8 | 81 2 | | 6 0 | 5 9 | 4 6 | |
| Total Monsoon | 289 37 | 48 67 | 87 33 | 14 77½ | 3 | 23 | 14 | 66 | 12 74 | 3 61 | 11 0 | 1 45 | 64 4 | 68 5 | 82 6 | | 4 7 | 5 4 | 4 2 | |

*Note by the Secretary.* A Table analogous to this, but having reference to the monsoon of 1835, will be found at page 213, of the 3rd number of the Society's Transactions. It will be useful to compare these tables, and also others that may be drawn up from future observations. — The difference between the existing tables regards the relative amount of rain fall at Paunchgunnee. In 1835, Malcolm Peth 196 inches; Paunchgunnee, 50 inches; Bombay, 55, inches. — In 1842 Malcolm Peth 289 inches; Paunchgunnee 48 inches; Bombay 87 inches: fractions are omitted.

3

*Annual Return of Patients in the Lunatic Asylum, Bombay; from the 1st January to the 31st December* 1841. By W. B. Barrington, Esq.

Presented by the Medical Board.

| | Remaining on the 31st December 1840. | Admitted. | Total. | Discharged. | Died. | Embarked to Europe. | Deserted. | Remained. |
|---|---|---|---|---|---|---|---|---|
| January | 37 | 7 | 44 | 6 | 2 | " | " | 36 |
| February | 36 | 11 | 47 | 5 | " | 2 | " | 40 |
| March | 40 | 10 | 50 | 9 | 1 | " | " | 40 |
| April | 40 | 9 | 49 | 11 | " | " | " | 38 |
| May | 38 | 3 | 41 | 6 | " | " | " | 35 |
| June | 35 | 9 | 44 | 9 | " | " | 1 | 34 |
| July | 34 | 5 | 39 | 4 | " | " | " | 35 |
| August | 35 | 7 | 42 | 4 | 1 | " | " | 37 |
| September | 37 | 7 | 44 | 4 | " | " | " | 40 |
| October | 40 | 9 | 49 | 8 | 1 | " | " | 40 |
| November | 40 | 5 | 45 | 5 | " | " | " | 40 |
| December | 40 | 14 | 54 | 8 | 2 | " | " | 44 |
| Total | | 96 | | 79 | 7 | 2 | 1 | |

Tabular Statement of the admissions and deaths for the last seven years from 1834.

| Years. | Admitted. | Died. |
|---|---|---|
| 1835 | 52 | 10 |
| 1836 | 43 | 8 |
| 1837 | 63 | 5 |
| 1838 | 60 | 11 |
| 1839 | 57 | 3 |
| 1840 | 80 | 8 |
| 1841 | 96 | 7 |

In addition to the tabular statement for the past year, I subjoin a statement of the admissions and deaths of the six preceding years, by which it will appear that the numbers admitted have increased nearly one hundred per cent since 1835, whilst the deaths in this increased number are numerically less. I have endeavoured repeatedly to ascertain the cause of this increase, but from the fact of the patient being almost invariably sent by the Magistrate of Police without any reference either to the family, occupation or habits, of the individual, I have scarcely ever been enabled to discover it: in some instances it has been traced to intemperance. The diminution in the mortality may be attributed to improvements in the wards, the greater facility of sea-bathing since the formation of the bath, and more particularly the constant employment in the garden and other occupation suited to individual patients as well as various amusements in which some of them experience much pleasure.

Restraint has been, as much as possible, done away with, and every patient is kept in the open air nearly the entire day, except there is some particular cause or reason for his confinement. The friends of patients have always been allowed to remove them, even when not improved, and to this may in some degree be attributed the great increase of admissions lately, and not to a real increase of insanity: patients discharged in this manner are reported to the Medical Board as delivered over to their friends.

Colaba, 1st February, 1842.

## 4.

### The late Assistant Surgeon John Fraser Heddle.

Since the publication of the last number of the Transactions, the Society has experienced the loss of the much valued associate whose name is prefixed to this paragraph.

Endowed with high proficiency in his immediate profession, Mr. Heddle also possessed extensive and well arranged information in History, Geography, Chemistry, Botany, Geology, and other branches of Natural History;—and these great and varied acquirements, always applied with an admirable spirit of philanthropy to increase the comforts and advance the happiness of mankind, were borne by this true lover of science with a humility so sincere and unaffected, that it was only in the unguarded moments of friendly intercourse, that the full measure of his knowledge and the perfect unselfishness of his disposition were allowed to become apparent even to those who enjoyed the privilege of his private friendship.

Though the only contribution made by Mr. Heddle to the Transactions of the Medical and Physical Society, titled "A* selection of cases of violent death which have formed the subjects of investigation before the Coroner of Bombay," is an excellent and practical paper, it conveys a very inadequate idea of the extent of the Society's obligations; — and the Secretary would ill discharge a duty due to the memory of his much esteemed friend, and to the Society,—did he not gladly avail himself of this opportunity of recording in these pages (what is unknown to others,) that by numerous acts of cheerful and unobtrusive co-operation, and by advice always practical and judicious and ever ready when solicited, Mr. Heddle's influence on the proceedings of this Society was not unimportant and is now the subject of grateful and pleasing recollection.

It was, however, as Secretary to the Geographical Society of Bombay and to the Agri-Horticultural Society of Western India, that Mr. Heddle enjoyed the fullest scope for the exercise of his talents; and these Societies, in a spirit of just admiration, are engaged in erecting a suitable monument commemorative of the rare endowments and the high-minded integrity which adorned their late Secretary and reflected honor upon them.

Such is the public testimony which has been borne to a life of usefulness and worth, cut short at the outset of a career of high promise;—nor have the private friends of this lamented individual been slow to testify their sympathy for his estimable qualities, and his early fall, by erecting a monumental obelisk on that spot of the Mahabuleshwar Hills where the remains of their departed friend repose.

Mr. Heddle arrived in Bombay, on the 6th December 1829, and died at Mahabuleshwar on the 6th March 1842. At different periods of his service he filled with marked credit the appointments of Assistant Garrison Surgeon and Deputy Medical Store-keeper at the Presidency; Store-keeper of the European General Hospital and Surgeon to the Coroner; Vaccinator and in Medical charge of the Police Corps. Latterly Mr. Heddle officiated as Deputy Assay Master and Acting Assay Master in the Mint, in which office he justly earned the confidence of the Government, and of that part of the community having transactions with that establishment.

* 1st Number of Transactions.

# QUARTERLY PROCEEDINGS

OF THE

# MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

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COMMITTEE OF MANAGEMENT FOR 1842.

*President.*

J. McADAM, ESQ.

*Members.*

R. H. KENNEDY, M. D. — J. McLENNAN, ESQ.
J. GLEN, ESQ. — J. BURNES, K. H.

*Secretary for* 1842 *and* 1843.

C. MOREHEAD, M. D.

*Proceedings from 1st October to 31st December*, 1841.

MEMBERS ELECTED.

*Ordinary.*

E. Sabbin, Esq., and G. J. McKenzie, Esq., Assistant Surgeons, Bombay Establishment; elected in accordance with Regulation No. 7.

*Communications Presented.*

1. A letter from the Royal College of Surgeons in London, acknowledging the 3d Number of the Society's Transactions.
2. A letter from Sir George Ballingall, thanking the Society for having elected him a Corresponding Member.
3. A letter from Government in the General Department, requesting a copy of the Society's Proceedings for transmission to the Honorable Court of Directors.
4. A letter from James Laidlaw, Esq., of Alexandria, acknowledging the receipt of the Numbers of the Society's Transactions.

5. Report of the Medical Statistics of Quetta; by A. H. Leith, Esq.; presented by the Medical Board.

6. Notes on the Climate, &c of Dadur, by A. Deas, Esq.; presented by the Medical Board.

7. A Case of Hydrophobia; presented by the Medical Board.

8. An Obscure Case of Phthisis Pulmonalis, by J. D. Cambpell, Esq; presented by the Medical Board.

*Proceedings from 1st January to 31 March, 1842.*

MEMBERS ELECTED.

*Ordinary.*

D. A. Carnegie, Esq., Assistant Surgeon, and B. A. Bremner, Esq., Surgeon, in Bombay.

E. Mahaffy, Esq.; W. Braikenridge, Esq.; John Miller, Esq.; H. J. Carter, Esq.; W. R. Dimock, Esq.; James Vaughan, Esq., and C. J Weston, Esq. Assistant Surgeons, Bombay Establishment; elected in accordance with Regulation No. 7.

*Communications Presented.*

1. A letter from the Medical Society of Madras, returning thanks for the copy of No. IV of the Society's Transactions presented to them.

2. Report on the Fever prevailing at Bancoot, by T. Waller, Esq.; presented by the Medical Board.

3. A Case of successful excision of the Elbow-joint, performed on board H. M.'s S. Dreadnought, by Surgeon C. Bush; presented by J D. Campbell, Esquire.

4. Case of the late Major ——, by A. Duncan, Esq.; presented by the Medical Board.

5. Meteorological Observations at the Convalescent Station on the Mahabuleshwar Hills, for the months of November and December, 1841, and January, 1842, by J. Murray, Esq.; presented by the Medical Board.

*Proceedings from 1st June, to 30th April 1842.*

MEMBERS ELECTED.

*Ordinary.*

W. Campbell, Esq.; T. J. Young, Esq; G. G. W. Maitland, Esq.; and J. Peet, Esq.; Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation No. 7.

*Communications Presented.*

1. Annual Report of the 2nd Battalion of Artillery for the year 1841; by T. Robson, Esq.; presented by the Medical Board.

2. Annual Report of the Native General Hospital for the year 1841, by A. Graham, Esq.; presented by the Medical Board.

3. Annual Return of Patients in the Lunatic Asylum, from 1st January to the 31st December 1841 ; by W. B. Barrington, Esq.; presented by the Medical Board.

4. Annual Report of the Civil Surgeon of Ahmedabad for the year 1841; by S. Sproule, Esq.; presented by the Medical Board.

5. Observations on the Iodide of Iron ; by D. Grierson, Esq.; presented by the Medical Board.

6. Annual Report of the 1st Troop Horse Artillery for the year 1841 ; by A. H. Leith, Esq ; presented by the Medical Board.

7. Annual Report of the 26th Regiment, N. I. for the year 1841 ; by A. Wright, Esq. ; presented by the Medical Board.

8. A Case of Tetanus ; by G. M. Seaward, Esq ; presented by the Medical Board.

9. Report on the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, for the year ending the 31st of December 1841, together with an account of the Climate and Medical Topography of the country ; by J. Floyd, Esq.; presented by the Medical Board.

10. A letter from W. T. Babington, Esq ; to the address of the Superintending Surgeon, regarding the sickness at Kotra; presented by the Medical Board.

*Proceedings from 1st July to 30th September*, 1842.

MEMBERS ELECTED.

*Ordinary.*

A. S. Thomson, Esq , Assistant Surgeon, H. M.'s 14th Lt Dragoons.

S. E. Trestrail, Esq.; M. Style, Esq.; F. Richardson, Esq.; W. J. Stuart, Esq.; and J. Russell, Esq., Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation, No. 7.

*Communications Presented.*

1. A letter from W. Watkins, Esq. requesting that his name may be withdrawn from the list of members.

2. A letter from H. Franklin, Esq., Deputy Inspector General of Hospitals, Bombay, acknowledging the receipt of the four published volumes of the Society's Transactions presented to him.

3 Annual Medical Report of Her Majesty's 2d or Queen's Royal Regiment, from the 1st of April 1841, to the 31st of March 1842 ; by R. H. A. Hunter, Esq.

4. History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment, during the monsoon of 1841, when quartered in the Colaba Barracks, Bombay ; by A. S. Thomson, Esq., M. D. Assistant Surgeon, 14th Light Dragoons, lately H. M.'s 17th foot.

5. Register of the Pluviometer at Bombay for the months of June and July 1842, presented by G. Noton, Esq.

COMMITTEE OF MANAGEMENT FOR 1843.

*President.*

R. H. KENNEDY, M. D.

*Members.*

J. GLEN, ESQ. J. G. MALCOLMSON, ESQ.
J. MCLENNAN, ESQ. J. BURNES, K. H.

*Secretary.*

C. MOREHEAD, M. D.

*Proceedings from 1st October, to 31st December, 1842.*

MEMBERS ELECTED.

*Ordinary.*

J. W. Moffat, Esq. Surgeon, Her Majesty's 14th Light Dragoons.

*Communications Presented.*

1. Statistical Reports prepared by the Medical Officers serving in Scinde with the Force under the Command of Brigadier England; presented by the Medical Board.

2. Remarks on the Practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases; by John Peet, Esq.

3. Medico-Historical Abstract of the first year's Service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons at Kirkee under the Bombay Presidency; by J. W. Moffat, Esq. Surgeon, H. M.'s 14th Light Dragoons.

4. Register of the Pluviometer at Bombay for the months of September and October 1842, presented by G. Noton, Esq.

*The following Proceedings of the Committee are recorded and published for the information of the Society.*

Bombay, 26th December, 1842.

Sir,— I am directed by the Committee of the Medical and Physical Society to transmit for your information the annexed copy of a Resolution which has been recorded in the Society's Proceedings, and to express a hope that the proposition therein made will meet with your concurrence.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) C. MOREHEAD,
*Secretary.*

To
R. H. A. HUNTER, ESQ.
*Staff Surgeon.*

Staff Surgeon R. H. A. Hunter, lately Assistant Surgeon in the 2d or Queen's Royal Regiment, being about to leave India for England, It is resolved — That in testimony of the just sense entertained by the Medical and Physical Society, of the obligations which Dr. Hunter has conferred by contributing the many excellent papers which have been published in the several Numbers of the Society's Transactions, — that Gentleman be requested to permit, on his departure from India, his name to be transferred from the list of Ordinary to that of Corresponding Members.

2. That the above Resolution be recorded in the Quarterly Proceedings and in the next number of the Society's Transactions.

Bombay, (Signed) C. MOREHEAD,
24th December, 1842. *Secretary.*

Bombay, 27th December, 1842.

Sir, — I have the honor to acknowledge your letter of the 25th instant, conveying a copy of a Resolution which has been recorded in the Society's Proceedings in my favor, and expressing a hope, that the proposition therein made might meet with my concurrence.

In reply permit me to asure the Committee of the Medical and Physical Society, that I feel highly gratified by this mark of their approbation, and express not only a ready concurrence but also my best thanks for their very flattering proposition, and to say it is an honor, however unmerited, I shall ever feel proud of and cherish.

I have the honor to be
Sir,
Your most obedient Servant,
(Signed) R. H. A. HUNTER,
*Staff Surgeon.*

To

C. MOREHEAD, ESQ.
*Secretary Medical and Physical Society, Bombay.*

## MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

*Circular.*

1. The Committee adverting to the large sum (Rs. 778) of accumulated arrears due by Subscribers, beg to direct attention to the Regulations of the Society relative to the payment of Subscriptions, viz.

8. " Ordinary Members to pay a fee of *five* Rupees on Election, and to contribute *twelve* Rupees annually, payable in *advance.*

9. " No member absent from India, shall be chargeable with his contribution for the period of his absence.

10. " Any Member neglecting to pay his annual contribution for two years, shall be considered to have withdrawn from the Society, and his name will be erased from the list of Members."

2. The Committee consider it unnecessary to do more than to point to these Regulations, for it must be evident that by neglecting to observe them the operations of the Society are impeded in many ways.

3. To those Members, however, whose arrears exceed two years Subscription, and to whom Regulation 30 is applicable, the Committee take this opportunity of intimating that should their Subscriptions not be paid up, before the 1st July next, the erasure of their names from the list of members will be recorded in the Quarterly Proceedings which fall to be published in that month.

C. MOREHEAD,

*Secretary Medical and Physical Society.*

Bombay, 23d January, 1843.

# LIST OF DONATIONS FOR THE LIBRARY.

By the Editor.

Madras Quarterly Medical Journal, No. III and IV.

By the Authors.

1. Outlines of Military Surgery, by Sir G. Ballingall.
2. An Examination of Reviews contained in the British and Foreign Medical Review and the Medical Chirurgical Review of the Medical and Physiological Commentaries, by M. Paine, M. D.
3. Cuvierian Natural History Society. An account of Artesian Wells, by E. T. Kelaart, Esq.
4. A Treatise on the formation, constituents and extraction of the Urinary Calculus, by J. G. Crosse, M. D., F. R. S.
5. A Discourse introductory to a course of Lectures on the Institutes of Medicine and Materia Medica; delivered before the medical class of the University of New York, at the session for 1841-42, by M. Paine, A. M., M. D., Professor, &c.
6. Dr. Paine's Answer to Circular Letters by Drs. Carpenter and Forbes, from the "Boston Medical and Surgical Journal."

By the Asiatic Society of Bombay.

Journal of the Bombay Branch Royal Asiatic Society, Nos. II. and III.

By E. F. Kelaart, Esq., M. R., C. S. L.

Testimonials in favour of John Hutton Balfour, M. D. Ed. F. R. S.

By M. L. Bouton, Esq., Secretary to the Society of Natural History in Mauritius.

A Copy of the Annual Report of the Society of Natural History in Mauritius.

By the Medical Board of Bombay.

1. The influence of Tropical Climates on European Constitutions; by J. Johnson, M. D. and J. R. Martin, Esq.

2. Researches into the causes, nature and treatment, of the more prevalent Diseases of India and of warm Climates generally: 2d edition; by J. Annesly, F. R. S., F. S. A,

3. Report on the Malignant Fever, called the Pali Plague, by J. Rankin, M. D. 1838.

4. Sketch of the Topography and Statistics of Dacca; by James Taylor, Esq. 1849.

5. Outline of the Topography and Statistics of the Southern Districts of Oudh; by Donald Butler, M. D. 1839.

6. Notes on the Medical Topography of Calcutta, by J. R. Martin, Esq. 1837.

7. Notes on the Medical Topography of the District of Sarun, by R. Rankin, Esq. 1839.

8. Topography of Meerut and the principal Diseases which prevailed in the 1st Brigade of Horse Artillery at that place; by J. Murray, M. D. 1839.

9. Topography of Assam; by J. M'Cosh, Esq. 1837.

10. A General View of the present state of Lunatics and Lunatic Asylums in Great Britain and Ireland, and in some other kingdoms; by Sir A. Halliday, M. D. and K. H. 1838.

11. General and Medical Topography of Kalee Kemaoon and Shore Valley; by W. Dollard, Esq. 1840.

12. Sketch of the Medical Topography of Bistmath; by D. A. Macleod, Esq. 1837.

13. Description of the new process of perforating and destroying the Stone in the Bladder; by J. Atkinson, Esq. 1831.

14. Investigation of cases of poisoning; by W. B. O'Shaughnessy, M. D.

15. Report on the Epidemic Cholera as it has appeared in the Territories subject to the Presidency of Fort St. George; by W. Scott, Esq. 1824.

16. Cholera with original Views on Fever, &c.; by C. Searle, Esq. 1830.

17. Sketches of the Medical Topography of the Mediterranean, comprising an account of Gibraltar, the Ionian islands, and Malta; by J. Hennen, M. D. F. R. S. E. 1830.

18. Hints to young Medical Officers of the Army on the examination of Recruits and respecting the feigned disabilities of Soldiers; with official documents and the regulations for the inspection of conscripts for the French and Prussian Armies; by H. Marshall, Esq. 1828.

19. A Report on the Medical Management of the Native Jails throughout the Territories subject to the Government of Fort William and Agra; by J. Hutchinson, Esq. 1835.

20. Table and Reports on Diseases, &c.; published by the Medical Board of Madras, 1828.

21. Some Account of the Gu
R. H. Irvine M. D. 1841.

By the Medical and

Transactions of the Medical
part 2.

# LIST OF MEMBERS

OF THE

# MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

## ORDINARY MEMBERS BOMBAY PRESIDENCY.

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H. S. Fleming, Esq., *Surgeon, Madras Establishment.*

W. Middlemas, Esq., *Assistant Surgeon, Madras Establishment.*
A. Anderson, Esq., *Acting Surgeon to H. B. Majesty's Superintendent in China.*
J. G. Malcomson, Esq., *Formerly Surgeon, Madras Establishment.*

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M. M. J. Desjardin, Esq., *Secretary to the Society of Natural History in Mauritius.*
Sir George Ballingall, *Professor of Military Surgery, Edinburgh.*
Dr. Laidlaw, *Alexandria.*

# TABLE OF CONTENTS

## OF NUMBERS I. II. III. IV. AND V. OF THE TRANSACTIONS OF THE MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

### No. I.

TRANSACTIONS FOR THE YEAR, 1837.

ART. I. — A General Sketch of the province of Guzerat from Deesa to Damaun. By A. Gibson, Esq., Vaccinator of the Deccan Division.

—— II. — Observations on the Climate of the Mahabuleshwur Hills. By J. Murray Esq., Surgeon of the Convalescent Station.

—— III. — A Report on a Disease which prevailed in Kattywar and in parts of the Zillah of Ahmedabad, in the years 1819 and 1820; addressed to the Secretary of the Medical Board. By Thomas Whyte, Esq., formerly of the Bombay Service.

—— IV. — A Report on a Disease which prevailed in part of Kutch and Kattywar, in the year 1815 and 1816; Addressed to the Secretary of the Medical Board. By J. McAdam, Esq., Superintending Surgeon Deccan Division, formerly Civil Surgeon in Kattywar.

—— V. — A Report on a Disease which prevailed in part of the Zillah of Ahmedabad in the years 1817, 1818 and 1819; addressed to the Secretary of the Medical Board. By J. Gilder, Esq., formerly of the Bombay Service.

—— VI. — A Few remarks on the Diseases in the Hospital of the 3rd Troop of the Horse Artillery at Deesa, during the months of August, September, October, November, and December 1834. By R. Brown, M. D. Assistant Surgeon, European General Hospital.

—— VII. — Observations on Dracunculus, extracted from the half yearly reports of the Diseases prevailing at Dharwar in the 1st Grenadier Regiment, in the year 1836. By D. Forbes, Esq., Surgeon.

—— VIII. — Historical Report of His Majesty's 2d or Queen's Royal Regiment for the year 1836. By R. H. A. Hunter, Esq., Assistant Surgeon. H. M.'s 2d Regiment.

—— IX. — Cases of Cardiac Disease and of Tubercular Phthisis occurring in His Majesty's 2d or Queen's Royal Regiment. By R. H. A. Hunter, Esq., Assistant Surgeon, H. M.'s 2d Regiment.

—— X. — A Few Notes on the Thermal Springs in the Konkan. By A. Duncan, Esq., Surgeon.

—— XI — Practical Surgical Cases. By W. B. Barrington, Esq., Civil Surgeon, Broach.

—— XII. — Notes on the state of Medical and Surgical Science in the countries bordering on the Indus. By P. Lord, M. B. in Medical Charge of the Cabool Mission.

TABLE OF CONTENTS.

— XIII. — A Selection of cases of violent Deaths which have formed subjects of investigation before the Coroner of Bombay. By Hoddle, Esq., Surgeon to the Coroner.

— XIV. — A Letter on the manner of breeding Leeches practised in the Deccan; addressed to the Secretary of the Society. By A. Gibb, Esq, Vaccinator, Deccan Division.

*Appendix.*

1. — Two cases of infantile Disease terminating fatally. By A. Duncan, Esq.

2. — Two cases of rapidly fatal cerebral inflammation, with obscure symptoms, complicated with croup-like cough. By J. Murray, Esq.

3. — Case of Poisoning by Bichloride of Mercury. Presented by J. Murray, Esq.

4. — Case of Poisoning by Opium. Presented by C. Morehead, Esq. M. D.

5. — A Case of Vascular Sarcoma and one of Femoral Aneurism. By F. Collier, Assistant Surgeon.

6. — Case of spontaneous evolution or doubling, which occurred after an abortive presentation. By T. Waller, Esq.

7. — Urethral obstruction by a calculus in a child of three years of age. By A. Duncan, Esq.

8 — Observations on the use of "Meeta tale," or the oil of the Semecarpus Orientale, in healing wounds. By A. Burn, M. D.

9 — Disease produced by the Anacardium Orientale, or Marking Nut. By Gibson, Esq.

10. — On the unhealthiness of some parts of Candeish at certain seasons. Presented by T. Williamson, Esq., Revenue Commissioner.

11. — Case of Ephidrosis Partialis. By A. Duncan, Esq.

12. — Case of Necrosis of the left radius. By J. P. Malcolmson, Esq.

13. — Case of sloughing and discharge of 25 inches of large intestine from the mesentery. By R. Brown, M. D.

14. — An Extract from Dr. Inglis' Report of the Diseases of the 22d Regt. N. I. for the first half year of 1836.

15. — General Abstracts of the returns of sick of the European and Native Troops belonging to the Presidency of Fort St. George, for the years 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834 and 1835. Published by the Medical Board of Madras.

16. — Tabular View of the Meteorology of the Convalescent Station on the Mahabuleshwur Hills, for each month, from October 1st 1836 to September, 30th 1837. By J. Murray, Esq.

17. — Case of Dysentery with sloughing, and discharge of a portion of the intestinal canal.

18. — Case of Tetanus extracted from Dr. McLennan's report of the Bombay Native General Hospital, for the half year commencing on the 1st January, and terminating on the 1st July, 1835.

19. — Form of Meteorological Table, recommended by the Committee for general adoption.

20. — Proceedings connected with the establishment of the Medical and Physical Society of Bombay.

21. — Regulations of the Medical and Physical Society of Bombay.
22. — Monthly and Quarterly Proceedings of the Medical and Physical Society of Bombay.
23. — List of Donations for the Library.
24. — List of Members of the Medical and Physical Society of Bombay.

---

No. II.

TRANSACTIONS FOR THE YEARS, 1838, 1839.

ART. I. — Report on the Disease at Pali, as observed in January and February, 1838. By F. Forbes, A. M. Assistant Surgeon.
—— II. — Annual Report of the Diseases of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April 1837, to the 31st March, 1838. By R. H. A. Hunter, Assistant Surgeon, H. M.'s 2d Regiment.
—— III. — Medical Report on the Mahabuleshwur Convalescent Station for the season 1837—38. By J. Murray, Esq.
—— IV. — Annual Report of the Diseases in the European General Hospital of Bombay, from the 1st of January, to the 31st of December, 1838. By James Bird, Esq.
—— V. — Cases illustrative of the Pathology of the Diseases of Bombay. By C. Morehead, Esq., M. D. Part I.
—— VI. — Topographical and Statistical details of Ahmednuggur. By R. T. Barra, Esq. Surgeon 1st Battalion of Artillery, with a Geological notice of the surrounding country. By Lieut. Ash, Bombay Artillery.
—— VII. — Statement of some peculiar Symptoms supposed to have been induced by a Narcotic Poison. By D. C. Bell, Esq.
—— VIII. — Cases illustrative of the influence of Lunar Agency as an occasional cause of periodical exacerbations in various Chronic Diseases. By J. Murray. Esq.
—— IX. — Report on the Measles which prevailed epidemically in the Central Schools at Byculla, during the months of December 1838, January, February, and March 1839. By C. Morehead, M. D.
—— X. — A few remarks on the Vegetation, the People, and Diseases, of the Deccan. By A. Gibson, Esq.
—— XI. — Observations on the Climate of Sattara. By A. Young, Esq.
—— XII. — Cases of Cardiac Disease and Aneurism of the Aorta. By R. H. A. Hunter, Esq., H. M.'s 2d Regiment.
—— XIII. — Surgical cases. By W. B. C. Graham, Esq. Civil Surgeon, Rajcote.
—— XIV. — Case of Prolapsus Ani cured by actual cautery. By John Scott, Esq.
—— XV. — Notes on the treatment of Cholera with Acetate of Lead. By C. Morehead, M. D.
—— XVI. — Tabular View of the Meteorology of the Convalescent Station on the Mahableshwur Hills for each month, from October, 1st 1837 to September 30th 1838. By J. Murray, Esq.
—— XVII. — Tabular View of the Meteorology of the Convalescent Station on

the Mahabuleshwur Hills, for each season, from 1st October, to 30th September, 1838.

— XVIII. — Meteorological Register kept at Ahmednuggur, from 1st 1835 to 30th June, 1836. By R. T. Barra, Esq.

— XIX. — Means of the Thermometer and amount of Rain-fall in the mo of June, July, August, and September 1837, at Broach, calcu from the register kept. By W.B. Barrington, Esq.

— XX. — Register of the Pluviometer at Kaira in Guzerat, 1838. B Burn, M. D.

*Appendix.*

1. — Notice of the Proceedings of the Committee of the Society relative t Medical Education of the Natives of the Bombay Presidency.
2. — Memoranda of the Proceedings of the Committee of the Society r ing some indigenous articles of Materia Medica, brought to its by Dr. Burn, Civil Surgeon, Kaira, and Dr. Gibson, Vaccinator can.
3. — Medical Report of the 6th Regiment N. I. By T. Robson, Esq.
4. — Miscellaneous remarks on the Maldives and Chagos Archipelago. Campbell, Esq., Assistant Surgeon.
5. — Observations on Scurvy as occurring in the crew of the Palinur W. Hardy. M. D.

Regulations of the Medical and Physical Society of Bombay, 1839.

Quarterly Proceedings of the Medical and Physical Society of Bombay.

List of Donations for the Library.

List of Members of the Medical and Physical Society of Bombay.

*Sketches of a Horny Tumour, removed by W. Deacon, Esq.*

No. III.

TRANSACTIONS FOR THE YEAR 1840.

ART. I. — A Short Sketch af the Medical Topography of the Fortress of B and the Cantonment of Sukkur in Upper Scinde, and Diseases which prevailed in the Brigade there, from the of March to that of December, 1839. By J. Don, M. D. Sta geon.

— II. — Notes on the Medical Topography of Tatta on the River Indus short notice of the Diseases which prevailed in the 22d Re N. I. when stationed at Tatta, or in progress up the River I boats, during the months of August, September, and Octob By J. Inglis, M. D.

— III. — Annual Report of the Native General Hospital at Bombay year 1838.

— IV. — Catalogue of Articles of the Materia Medica of Europe an found at Aurungabad and in its vicinity. By A. Walker,

— V. — Annual Report for 1839, of the 1st Regiment, Bombay Eu Infantry, stationed at Aden. By J. Howison, Esq.

VI. — [illegible] of Aden Ulcers received in the Marine Battalion Hospital, Bombay, 1839. By A. Campbell, M. D.

VII. — Practical Observations on the Pathology and Treatment of Tropical Dysentery. By James Bird, Esq.

—— VIII. — Annual Report of Native General Hospital at Bombay, for the year 1839.

—— IX. — Annual Report of the Diseases, in the Jail and Detachment Hospitals of Rutnagherry in the Southern Concan, from the 1st January, to the 31st December 1839. By John Bourchier, M. D.

—— X. — Medical History of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April 1838, to the 31st of March 1839, By R. H. A. Hunter, Esq.

—— XI. — Medical History of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April, 1839, to the 31st March, 1840, during the Campaign in Affghanistan. By R. H. A. Hunter, Esq.

—— XII. — A Synopsis of ten years Meteorological Observations on the Mahabuleshwur Hills, Lat 17° 56' N. Long 73° 30' E. Heighth above the sea, 4500 feet. Table I. showing the means and extremes of Temperature &c. for each month (1828-1838.)

Table II shewing the means and extremes of Temperature, &c. for each season (1828-1838). Summary of mean and extreme decennial results.

*Appendix.*

1 — Abstract of the Annual Reports, for the year, 1838 and 1839 of the Field Detachments stationed at Balmeer. By the late Assistant Surgeon S. Prichard.

2. — Meteorological Observations, chiefly on solar radiation, made at Mhow, by A. Weatherhead, Esq. M. D.

3. — Notes on the Scurvy, as it has appeared at various times, in the Jail at Rutnagherry, by J. Bourchier, M. D.

4. — Description of the operation of Lithotomy, as performed by a Native Surgeon in the presence of A. Gibson, Esq. communicated by that Gentleman in a letter addressed to the Secretary to the Society.

5. — A short Notice of the Station of Kurachee in Lower Scinde. By F. S. Cahill, M. D. in a letter addressed to the Superintending Surgeon.

6. — Notes on the Climate of Paunchgunnee situated on the Eastern side of the Mahabuleshwur Hills.

7. — Account of a Disease, which affects the Camels in the province of Lus; called Photo Shootur by the Natives, and supposed by them to have properties analogous to those of the Variolæ Vaccinæ. Extracted from Dr. Winchester's report on the Topography of Tatta.

8. — Case of dislocation of the lower Jaw, caused by the act of vomiting; communicated by W. Mackie, Esq.

9 Note on the Catalogue of Articles of the Materia Medica. By A. Walker, M. D.

Quarterly Proceedings of the Medical and Physical Society of Bombay.
List of Donations for the Library.
List of Members of the Medical and Physical Society of Bombay.

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No. IV.

TRANSACTIONS FOR THE YEAR 1841.

ART. I. — Experiments illustrative of the Physiological effects of Calo... the Gastro-intestinal mucous membrane of Dogs. By J... ray, Esq.

— II. — Report on the Diseases which have occurred in the H. C.'s ... Flotilla on the rivers of Mesopotamia, from the 1st Jan... to the 31st December, 1839, with a short sketch of the Clim... Topography. By John C. Floyd, Esq. Surgeon in charge.

— III. — Report of the 1st Troop Horse Brigade, stationed at Sho... Poona, and on Field Service in Scinde, for the years 183... and 1840. By A. H. Leith, Esq.

— IV. — Statistical Review of the Climates of the principal Stations ... ropean Troops in the Bombay Presidency. By R. H. A. ... Esq. H. M.'s 2d or Queen's Royal.

— V. — On the Jungle Fever of Candeish. Extracted from the ... Report of the 15th Regiment N. I. for the year, 1840. By ... Graham, Esq.

— VI. — Observations on the Dracunculus as it prevailed in 22... ment, N. I from April till September, 1841. By D. Gr... Esq.

— VII. — Notes sur la plaie du Yemen, offrant l' analyse d' une m... phie de cette Maladie. Par M. Le Lieutenant Colonel L... dufay, Medecin Inspecteur des armees d' Arabie.

— VIII. — Report on the Medical Statistics of Quetta. By A. H... Esq.

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*Appendix.*

1. — Catalogue of Medicines found in the Bazars of Hydrabad, Khyr... and Shikarpur. By the late P. B. Lord, M. D.

2. — General Remarks on the remedial effects of the extract of Ganj... served at the Native General Hospital at Bombay: forwarded w... cases of Tetanus, treated in that Institution. By A. Graham, ...

3. — Extract from the annual Report of the sick in Hospital of the 10... ment, N. I. stationed at Aden, for 1840. By C. Black, Esq.

4. — Extract from the second half yearly Report of the Oculist's Dep... for 1840. By M. Stovell, Esq.

5. — Case of Hydrophobia.

6. — Case of extensive tubercular deposition over the convex surfac... the

TABLE D.

## DEESA.

*Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed at Deesa, between the years 1830 and 1846: shewing the Average Number of Admissions and Deaths, and from the principal Diseases, for each Month throughout the Year.*

| | | Average Strength | Fevers. Average number of Admissions | Fevers. Average number of Deaths | Fevers. Ratio of Admissions per 1000 of Strength | Fevers. Ratio of Deaths per 1000 of Strength | Pulmonic Affections. Average number of Admissions | Pulmonic Affections. Average number of Deaths | Pulmonic Affections. Ratio of Admissions per 1000 of Strength | Pulmonic Affections. Ratio of Deaths per 1000 of Strength | Diarrhœa. Average number of Admissions | Diarrhœa. Average number of Deaths | Diarrhœa. Ratio of Admissions per 1000 of Strength | Diarrhœa. Ratio of Deaths per 1000 of Strength | Dysentery. Average number of Admissions | Dysentery. Average number of Deaths | Dysentery. Ratio of Admissions per 1000 of Strength | Dysentery. Ratio of Deaths per 1000 of Strength | Cholera. Average number of Admissions | Cholera. Average number of Deaths | Cholera. Ratio of Admissions per 1000 of Strength | Cholera. Ratio of Deaths per 1000 of Strength | Hepatic Affections. Average number of Admissions | Hepatic Affections. Average number of Deaths | Hepatic Affections. Ratio of Admissions per 1000 of Strength | Hepatic Affections. Ratio of Deaths per 1000 of Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| An Average of 8 years | January | 630.000 | 16.500 | 0.238 | 13.634 | 0.377 | 6.000 | ..... | 7.054 | ..... | 4.136 | ..... | 4.830 | ..... | 6.135 | 0.000 | 7.301 | 0.794 | ..... | ..... | ..... | ..... | 1.500 | ..... | 1.500 | ..... |
| An Average of 17 years, from 1830 to 1846, inclusive | February | 631.117 | 16.126 | 0.270 | 18.734 | 0.793 | 2.692 | 0.117 | 3.129 | 0.127 | 4.150 | ..... | 4.524 | ..... | 5.500 | 0.000 | 8.182 | 0.318 | 0.117 | 0.058 | 0.127 | 0.063 | 2.647 | 0.000 | 2.823 | ..... |
| | March | 640.240 | 24.402 | 0.222 | 27.289 | 0.248 | 4.000 | 0.000 | 4.222 | 0.210 | 5.941 | 0.176 | 6.103 | 0.180 | 6.000 | 0.000 | 9.382 | 0.372 | 0.058 | ..... | 0.062 | ..... | 4.340 | 0.000 | 4.580 | ..... |
| | April | 650.000 | 27.705 | 0.551 | 33.062 | 0.910 | 4.235 | 0.176 | 4.400 | 0.181 | 5.647 | 0.058 | 5.990 | 0.091 | 9.294 | 0.235 | 7.441 | 0.240 | 0.294 | ..... | 0.937 | ..... | 3.235 | 0.117 | 3.294 | 0.058 |
| | May | 650.222 | 40.000 | 0.941 | 42.551 | 0.941 | 4.323 | 0.176 | 4.588 | 0.181 | 5.000 | 0.058 | 5.210 | 0.091 | 5.294 | 0.235 | 5.602 | 0.303 | 0.000 | 0.058 | 0.000 | 0.062 | 3.470 | 0.117 | 3.529 | 0.058 |
| | June | 651.111 | 32.235 | 1.176 | 33.373 | 1.235 | 4.882 | 0.176 | 5.017 | 0.181 | 4.470 | 0.117 | 4.650 | 0.122 | 5.058 | 0.058 | 5.058 | 0.000 | 0.176 | 0.058 | 0.183 | 0.062 | 3.882 | 0.176 | 4.000 | 0.058 |
| | July | 652.333 | 30.000 | 0.235 | 30.405 | 0.245 | 4.294 | 0.000 | 4.588 | 0.000 | 6.235 | ..... | 6.515 | ..... | 6.588 | 0.058 | 6.958 | 0.184 | 1.117 | 0.117 | 1.181 | 0.125 | 3.705 | ..... | 3.941 | 0.000 |
| | August | 650.658 | 28.000 | 0.470 | 32.630 | 0.556 | 4.294 | ..... | 4.577 | ..... | 6.941 | ..... | 10.000 | ..... | 10.941 | 0.235 | 14.403 | 0.556 | 0.705 | 0.176 | 0.753 | 0.188 | 3.411 | 0.352 | 3.637 | 0.117 |
| | September | 649.894 | 26.411 | 0.235 | 24.044 | 2.181 | 3.705 | 0.235 | 3.990 | 0.240 | 6.882 | 0.235 | 6.110 | 0.240 | 6.705 | 0.117 | 10.252 | 0.181 | 0.705 | 0.470 | 0.813 | 0.498 | 3.235 | 0.647 | 3.400 | 0.705 |
| | October | 651.170 | 27.705 | 0.647 | 100.042 | 0.995 | 4.000 | 0.000 | 4.294 | 0.000 | 5.529 | 0.117 | 5.851 | 0.188 | 5.823 | 0.294 | 5.970 | 0.240 | 0.117 | 0.058 | 0.126 | 0.063 | 2.705 | 0.294 | 2.107 | 0.000 |
| | November | 652.470 | 32.647 | 0.411 | 36.015 | 0.915 | 3.058 | 0.058 | 3.308 | 0.729 | 5.470 | 0.000 | 5.824 | 0.129 | 7.647 | 0.000 | 8.130 | 0.000 | 0.058 | 0.058 | 0.001 | 0.001 | 1.941 | 0.058 | 2.107 | 0.058 |
| | December | 650.894 | 32.647 | 1.058 | 36.501 | 1.352 | 3.588 | 0.058 | 3.529 | 0.595 | 5.411 | ..... | 5.990 | ..... | 7.940 | 0.647 | 8.761 | 0.705 | 0.176 | 0.058 | 0.191 | 0.063 | 2.058 | 0.470 | 2.237 | 0.057 |
| | Total for the Year | 651.252 | 337.087 | 16.481 | 337.340 | 15.455 | 48.310 | 1.530 | 52.570 | 1.874 | 65.551 | 0.878 | 71.400 | 0.000 | 92.957 | 4.529 | 93.668 | 4.861 | 0.950 | 1.111 | 4.559 | 1.184 | 35.258 | 2.294 | 37.231 | 0.000 |

TABLE D.

## DEESA.

*Table of the Sickness and Mortality among the European Troops (Queen's and Company's) stationed at Deesa, between the years* 1830 *and*
*from the principal Diseases, for each Mont*

| | | Average Strength. | Fevers. | | | | Pulmonic Affections. | | | | Diarrhœa. | | | | Dysente | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Average number of Admissions. | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admission per 1000 of strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admission per 1000 of strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admissions |
| An Average of 8 years | January .... | 850.500 | 16.750 | 0.250 | 19.694 | 0.293 | 6.000 | .... | 7.054 | .... | 4.125 | .... | 4.850 | .... | 6.125 | 0.625 | |
| An Average of 17 years, from 1830 to 1846, inclusive. | February .... | 921.117 | 18.176 | 0.176 | 19.733 | 0.191 | 2.882 | 0.117 | 3.129 | 0.127 | 4.176 | .... | 4.534 | .... | 5.529 | 0.294 | |
| | March ..... | 940.700 | 24.882 | 0.235 | 26.289 | 0.248 | 4.000 | 0.294 | 4.225 | 0.310 | 5.941 | 0.176 | 6.163 | 0.185 | 6.000 | 0.294 | |
| | April ..... | 956.000 | 27.764 | 0.352 | 29.042 | 0.369 | 4.235 | 0.176 | 4.430 | 0.184 | 5.647 | 0.058 | 5.906 | 0.061 | 5.294 | 0.235 | |
| | May ..... | 958.235 | 40.882 | 0.941 | 42.651 | 0.981 | 5.353 | 0.176 | 5.584 | 0.184 | 5.000 | 0.058 | 5.216 | 0.061 | 5.235 | 0.353 | |
| | June..... | 951.411 | 50.294 | 1.176 | 61.673 | 1.223 | 4.823 | 0.176 | 5.017 | 0.183 | 4.470 | 0.117 | 4.650 | 0.122 | 5.058 | 0.294 | |
| | July ..... | 957.529 | 56.882 | 0.235 | 59.405 | 0.245 | 5.294 | 0.058 | 5.528 | 0.061 | 6.235 | .... | 6.515 | .... | 6.588 | 0.058 | |
| | August..... | 936.058 | 58.588 | 0.470 | 62.456 | 0.502 | 4.294 | .... | 4.577 | .... | 9.941 | .... | 10.597 | .... | 13.941 | 0.235 | |
| | September .. | 943.294 | 70.411 | 2.529 | 74.644 | 2.681 | 2.764 | 0.235 | 2.930 | 0.249 | 8.882 | 0.235 | 9.416 | 0.249 | 9.705 | 0.117 | |
| | October .... | 914.176 | 97.764 | 2.647 | 106.942 | 2.895 | 4.000 | 0.058 | 4.375 | 0.064 | 5.353 | 0.117 | 5.855 | 0.128 | 5.823 | 0.588 | |
| | November .. | 907.470 | 52.647 | 2.411 | 58.015 | 2.657 | 2.058 | 0.117 | 2.268 | 0.129 | 3.470 | 0.117 | 3.824 | 0.129 | 7.647 | 0.589 | |
| | December .. | 929.294 | 33.647 | 1.058 | 36.204 | 1.139 | 3.000 | 0.352 | 3.230 | 0.380 | 5.411 | .... | 5.890 | .... | 7.882 | 0.647 | |
| | Total for the Year.... | 931.252 | 557.687 | 12.481 | 597.145 | 13.425 | 48.703 | 1.730 | 52.076 | 1.874 | 66.651 | 0.878 | 71.406 | 0.950 | 82.827 | 4.528 | |

## TABLE C.

## BELGAUM.

*...an Troops (Queen's and Company's) stationed at Belgaum, between the Years 1830 and 1846 : showing the Average Number of Admissio... from the principal Diseases, for each Month throughout the Year.*

| | | Pulmonic Affections. | | | | Diarrhœa. | | | | Dysentery. | | | | Cholera. | | | | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average Number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. |
| | 0.454 | 4.600 | 0.400 | 5.232 | 0.454 | 5.800 | .... | 6.596 | .... | 6.200 | 0.400 | 7.051 | 0.454 | 0.200 | .... | 0.227 | .... | 8.000 |
| | 0.113 | 5.200 | 0.200 | 5.883 | 0.226 | 4.100 | .... | 4.638 | .... | 9.700 | 0.700 | 10.974 | 0.791 | 0.200 | .... | 0.226 | .... | 6.800 |
| | 0.332 | 7.200 | 0.300 | 7.980 | 0.332 | 2.400 | .... | 2.662 | .... | 9.200 | 0.500 | 10.208 | 0.553 | .... | .... | .... | .... | 8.100 |
| | 0.440 | 5.800 | .... | 6.380 | .... | 3.500 | .... | 3.855 | .... | 14.000 | 1.000 | 15.421 | 1.101 | 0.600 | .... | 0.660 | .... | 10.400 |
| | 0.755 | 6.300 | 0.100 | 6.776 | 0.107 | 7.200 | .... | 7.749 | .... | 13.700 | 1.200 | 14.783 | 1.234 | 0.400 | 0.100 | 0.431 | 0.107 | 8.900 |
| | 0.217 | 5.100 | 0.100 | 5.551 | 0.108 | 5.700 | 0.200 | 6.205 | 0.217 | 16.400 | 1.400 | 17.853 | 1.524 | 0.500 | 0.200 | 0.544 | 0.217 | 11.100 |
| | 0.217 | 5.900 | 0.100 | 6.428 | 0.108 | 5.800 | 0.200 | 6.319 | 0.217 | 18.900 | 1.200 | 20.592 | 1.307 | 0.700 | 0.600 | 0.762 | 0.654 | 9.800 |
| | 0.218 | 7.700 | 0.300 | 8.424 | 0.328 | 2.800 | .... | 3.063 | .... | 16.800 | 1.600 | 18.380 | 1.750 | .... | .... | .... | .... | 10.200 |
| | 0.334 | 6.200 | .... | 6.929 | .... | 2.300 | 0.100 | 2.567 | 0.111 | 8.600 | 0.600 | 9.598 | 0.669 | 0.100 | .... | 0.111 | .... | 8.000 |
| | 0.349 | 4.000 | 0.100 | 4.658 | 0.116 | 2.500 | .... | 2.901 | .... | 10.500 | 0.700 | 12.226 | 0.815 | 1.500 | 0.300 | 1.746 | 0.349 | 10.300 |
| | 0.919 | 10.000 | 0.100 | 11.496 | 0.114 | 2.100 | 0.100 | 2.414 | 0.114 | 7.800 | 0.300 | 8.967 | 0.344 | 1.700 | 1.000 | 1.954 | 1.149 | 6.100 |
| | 0.434 | 6.400 | .... | 6.958 | .... | 3.100 | .... | 3.370 | .... | 7.800 | 0.500 | 8.481 | 0.543 | .... | .... | .... | None. | 6.500 |
| | 4.782 | 74.400 | 1.700 | 82.704 | 1.893 | 47.200 | 0.600 | 52.360 | 0.660 | 142.600 | 10.100 | 154.534 | 11.145 | 5.900 | 2.200 | 6.661 | 2.476 | 104.800 |

*ssions and Deaths, and the Ratio of Admissions and Deaths to Strength,*

| | Hepatic Affections. | | | Other Diseases. | | | | Total. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average Number of Admissions. | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. | Average number of Admissions. | Average number of Deaths. | Ratio of Admissions per 1000 of Strength. | Ratio of Deaths per 1000 of Strength. |
| 00 | 0.200 | 9.779 | 0.227 | 60.000 | 0.600 | 68.243 | 0.682 | 114.400 | 2.000 | 126.706 | 2.274 |
| 00 | 0.200 | 7.670 | 0.226 | 55.500 | 0.400 | 62.789 | 0.452 | 110.800 | 1.600 | 125.355 | 1.810 |
| 00 | 0.300 | 8.988 | 0.332 | 71.700 | 0.200 | 79.560 | 0.221 | 126.200 | 1.600 | 140.035 | 1.775 |
| 00 | 0.200 | 11.456 | 0.220 | 65.800 | 0.300 | 72.482 | 0.330 | 134.200 | 1.900 | 147.829 | 2.092 |
| 00 | .... | 9.603 | .... | 75.300 | 0.300 | 81.256 | 0.215 | 148.000 | 2.400 | 159.706 | 2.481 |
| 00 | 0.400 | 12.083 | 0.435 | 64.900 | 0.200 | 70.650 | 0.217 | 139.200 | 2.700 | 151.534 | 2.939 |
| 00 | 0.500 | 10.677 | 0.554 | 63.900 | 0.600 | 69.623 | 0.654 | 139.000 | 3.400 | 151.449 | 3.704 |
| 00 | 0.200 | 11.159 | 0.218 | 58.200 | 0.500 | 63.676 | 0.547 | 123.800 | 2.800 | 135.448 | 3.063 |
| 00 | 0.500 | 8.929 | 0.548 | 56.400 | 0.200 | 62.962 | 0.223 | 109.200 | 1.700 | 121.922 | 1.919 |
| 00 | 0.300 | 11.904 | 0.349 | 66.000 | 0.300 | 76.860 | 0.349 | 129.500 | 2.000 | 150.809 | 2.329 |
| 00 | .... | 7.013 | .... | 53.900 | 0.100 | 61.968 | 0.114 | 123.900 | 2.400 | 142.446 | 2.759 |
| 00 | 0.300 | 7.067 | 0.326 | 61.700 | 0.200 | 67.087 | 0.217 | 119.900 | 1.400 | 130.368 | 1.522 |
| 00 | 3.100 | 116.418 | 3.435 | 752.300 | 3.900 | 837.156 | 4.221 | 1515.100 | 25.900 | 1683.607 | 28.667 |

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---

*Appendix.*

1. — Catalogue of Medicines found in the Bazars of Hydrabad, Khyr... and Shikarpur. By the late P. B. Lord, M. D.

2. — General Remarks on the remedial effects of the extract of Ganj... served at the Native General Hospital at Bombay: forwarded ... cases of Tetanus, treated in that Institution. By A. Graham, ...

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— IX. — A letter on the Fever which prevailed at Bankote in the S. Concan in 1841, addressed to the Superintending Surgeon of the Presidency Division. By T. Waller, Esq.

CONTENTS

Art. X. — *Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases.* By John Peet, Esq.

—— XI. — Medico-Historical Abstract of the 1st year's service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons, at Kirkee, under the Bombay Presidency. By J. W. Moffat, Esq., Surgeon H. M 's 14th Light Dragoons.

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TABLE OF CONTENTS.

ART. X. — Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases. By John Peet, Esq.

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